



Mr. Samuel Borries
USEPA Region 5
77 West Jackson Boulevard (SE-5J)
Chicago, IL 60604-3507

Mr. Paul Bucholtz
MDEQ
525 W. Allegan Street, 3rd Floor South
Lansing, MI 48933-1502

Ms. Sharon Hanshue
MDNR
530 West Allegan Street
Lansing, MI 48933-1521

Subject:
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Time-Critical Removal Action – Former Plainwell Impoundment
2009 Q1, Q2, and Q3 Groundwater Sampling Results

Dear Mr. Borries, Mr. Bucholtz, and Ms. Hanshue:

In accordance with the approved *Former Plainwell Impoundment Time-Critical Removal Action Design Report* (TCRA Design Report; ARCADIS BBL 2007a) and the *Supplemental Remedial Investigation/Feasibility Study Work Plan – Morrow Dam to Plainwell Dam* (Area 1 SRI/FS Work Plan; ARCADIS BBL 2007b), the Kalamazoo River Study Group (KRSG) installed, monitoring, and sampled fifteen groundwater monitoring wells in the former Plainwell Impoundment in Allegan County, Michigan.

The goals of the groundwater investigation are to:

1. Evaluate the potential presence of polychlorinated biphenyls (PCBs) in the groundwater within areas of the former Plainwell Impoundment in which PCB-containing sediments were, by design, left in place after completion of the TCRA.
2. Assess the migration of PCBs (if any) in groundwater to the Kalamazoo River.
3. Develop groundwater data that are of adequate quality to support an ecological risk assessment, if appropriate.

ARCADIS
30 West Monroe
Suite 1710
Chicago
Illinois 60603
Tel 312.332.4937
Fax 312.332.4434
www.arcadis-us.com

Date:
December 9, 2009

Contact:
Steve Garbaciak

Phone:
312.332.4937 x12

Email:
Steve.Garbaciak@
arcadis-us.com

Our ref:
B0064539.0000.00500

As described in the TCRA Design Report and Area 1 SRI/FS Work Plan, the groundwater monitoring program was designed to include eight quarterly sampling events over a two-year period. Three of the quarterly sampling events are now complete (April, June, and September 2009). PCBs have not been detected in any of the 45 groundwater samples collected by ARCADIS, or any of the 15 split samples collected by the Michigan Department of Environmental Quality (MDEQ).

We believe these results indicate that PCBs are not present in groundwater, and that it is reasonable to conclude groundwater in the former Plainwell Impoundment is not of concern with respect to either potential migration to the Kalamazoo River or potential risks to ecological receptors. If the results of the fourth quarter groundwater samples, which will be collected in December 2009, are consistent with the prior three quarters of data such that these conclusions are further supported, we will submit a request for U.S. Environmental Protection Agency (USEPA) approval to discontinue groundwater sampling at all wells in the former Plainwell Impoundment and permanently abandon the monitoring wells according to applicable MDEQ standards.

Information to support USEPA's consideration of a request to discontinue sampling – including details of the installation, approach, and results available from the first three quarters of sampling – are described below and in the supporting tables, figure, and attachments.

Installation of Well Network and Staff Gauges

The locations of the wells and the construction methods used in the field were approved by USEPA and MDEQ and are summarized in a March 4, 2009 letter (Cowin 2009). Pilot soil borings were drilled between November 10 – November 17, 2008, and a network of 15 monitoring wells (MW-1 through MW-15) was installed between March 2 and March 27, 2009. The soil borings and well installations were performed by Mateco Drilling Company under the observation of ARCADIS. Following installation, Mateco developed the wells to remove fine-grained particles that remained in the wells and re-establish the natural hydraulic flow conditions. The locations of the wells are shown on Figure 1. Well construction notes and logs are included in Attachments 1 and 2, respectively.

In addition to the well network, five staff gauges (SG-1 to SG-5) were installed to monitor surface water elevations within the Kalamazoo River. Staff gauges were mounted on fixed structures. Surface water elevation measurements were obtained to track seasonal variability. The locations of the staff gauges are shown on Figure 1.

The horizontal and vertical coordinates of the monitoring wells and staff gauges, as well as the elevation of the top of each staff gauge and its zero point, were surveyed by a Michigan-registered surveyor and incorporated into the GIS database for the project. The coordinates for each well and gauge are listed in Table 1.

Groundwater Monitoring Approach

Groundwater monitoring was scheduled to be conducted for eight quarterly sampling events over a two-year period. To date, ARCADIS has performed three quarterly sampling events, and the fourth will be conducted in December 2009. Prior to each sampling event, groundwater and surface water elevations are monitored for a period of two weeks to verify that water is flowing to the river. Data from the first three sampling events are tabulated in Table 2.

Groundwater and surface water samples were collected during the weeks of April 13, June 29, and September 21, 2009 (the fourth round of sampling is scheduled for the week of December 14, 2009). Sampling logs are included in Attachment 3. Groundwater samples were collected using ultra-low flow sampling techniques. Surface water samples were collected from the river within the former Plainwell Impoundment on the first day and last day of quarterly groundwater sampling activities. Surface water samples were collected near SG-5 (see Figure 1) during each groundwater monitoring event.

A total of 45 groundwater samples (excluding duplicate samples) were collected by ARCADIS. All samples were submitted to Test America Labs in Burlington, Vermont for the following analyses (sample analytical methods to be consistent with the *Multi-Area Quality Assurance Project Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site, Revision 1* [Multi-Area QAPP, ARCADIS 2009]):

- Total PCBs by Aroclor
- Total Organic Carbon
- Total Dissolved Solids and Total Suspended Solids
- Chloride, Sulfate, Alkalinity, Sodium, Potassium, Magnesium, and Calcium

Consistent with the Multi-Area QAPP, one blind duplicate sample was collected for every 10 samples of each sample matrix for all analytical parameters, and one matrix spike/matrix spike duplicate sample was collected for every 20 samples analyzed for PCBs.

MDEQ also collected 15 split samples – these samples were submitted to Northeast Analytical Labs in Detroit, Michigan for PCB analysis. MDEQ samples were not analyzed for inorganic constituents. MDEQ's validated split sample PCB results were sent to ARCADIS on August 10 and November 25, 2009 (Santini 2009a and 2009b).

Results of First Three Quarters of Groundwater Sampling

PCBs were not detected in any of the groundwater samples collected by ARCADIS or MDEQ at quantitation limits ranging from 0.025 micrograms per liter ($\mu\text{g/L}$) to 0.052 $\mu\text{g/L}$ (the quantitation limit used by Northeast Analytical Labs was 0.025 $\mu\text{g/L}$, while the quantitation limit at Test America Labs ranged from 0.047 to 0.052 $\mu\text{g/L}$).

PCB analytical results for all samples (including MDEQ's split samples) are summarized in Table 3, and analytical results for inorganic constituents are summarized in Table 4. Full validation packages for the samples collected by ARCADIS are included in Attachment 4, and copies of analytical reports for MDEQ samples are included in Attachment 5.

Reporting of Fourth Quarter Groundwater Sampling Results

We appreciate your consideration of this matter. Results of the fourth round of sampling and analysis to be conducted in December 2009 will be communicated to USEPA and MDEQ when they are available, which we anticipate in January 2010.

Following receipt of the fourth quarter sampling results, it is our hope that USEPA would address a request to discontinue groundwater sampling in advance of needing to arrange for water level monitoring that would otherwise be scheduled in February or March for the first quarter 2010 sampling round. This letter is provided now to facilitate USEPA's early consideration of this issue. If you have any questions, please do not hesitate to contact us.

Sincerely,

ARCADIS



Stephen Garbaciak Jr., P.E.
Vice President

/pt
Enclosures

Mr. Samuel Borries
Mr. Paul Bucholtz
Ms. Sharon Hanshue
December 9, 2009

Copies:

James Saric, USEPA
Jeff Keiser, CH2M Hill
J. Michael Davis, Esq., Georgia-Pacific LLC
Garry Griffith, P.E., Georgia-Pacific LLC
L. Chase Fortenberry, P.G., Georgia-Pacific LLC
Mark P. Brown, PhD, Waterviews LLC
Michael J. Erickson, P.E., ARCADIS
Douglas K. Cowin, P.G., ARCADIS
Martin Lebo, Weyerhaeuser Company
Kathy Huibregtse, RMT Inc.
Richard Gay, Weyerhaeuser Company

Tables

- Table 1 – Groundwater and Surface Water Readings
- Table 2 – Groundwater and Surface Water Elevations
- Table 3 – Summary of PCB Samples Collected and Data Received through November 2009
- Table 4 – Summary of Inorganic Samples Collected and Data Received through November 2009

Figure

- Figure 1 – Groundwater Monitoring Well Location Map

Attachments (electronic only – included on attached CD)

- Attachment 1 – Groundwater Monitoring Well Construction Field Notes
- Attachment 2 – Groundwater Monitoring Well Construction Logs
- Attachment 3 – Groundwater and Surface Water Sampling Logs
- Attachment 4 – Validation Packages
- Attachment 5 – Analytical Reports for MDEQ Split Samples

References

- ARCADIS BBL. 2007a. *Former Plainwell Impoundment Time-Critical Removal Action Design Report*. February 2007.
- ARCADIS BBL. 2007b. *Supplemental Remedial Investigation/Feasibility Study Work Plan – Morrow Dam to Plainwell (Area 1 SRI/FS Work Plan)*. February 2007.
- ARCADIS. 2009. *Multi-Area Quality Assurance Project Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site, Revision 1*. November 2009.
- Cowin, D. 2009. Letter from Douglas K. Cowin, P.G. (ARCADIS) to Michael Ribordy (USEPA) re: *Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site Time Critical Removal Action – Former Plainwell Impoundment Groundwater Monitoring Well Installation Plan*. March 4, 2009.
- Santini, A. 2009a. Electronic transmittal of Plainwell TCRA oversight PCB analytical results for groundwater samples collected in June-July 2009 from Drew Santini, Camp Dresser McKee to Doug Cowin, ARCADIS. August 10, 2009.
- Santini, A. 2009b. Electronic transmittal of Plainwell TCRA oversight PCB analytical results for groundwater samples collected in September 2009 from Drew Santini, Camp Dresser McKee to Doug Cowin, ARCADIS. November 25, 2009.

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Table 1 – Groundwater and Surface Water Readings

Location	Coordinates ¹		Reference Elevation ^(2,3)	Staff Gage Water Elevations/Monitoring Well Depth to Water																	
	Northing	Easting		03.27.09	03.30.09	04.02.09	04.03.09	04.04.09	04.05.09	04.13.09	04.17.09	06.16.09	06.18.09	06.23.09	06.25.09	09.09.09	09.11.09	09.14.09	09.17.09	09.21.09	09.24.09
Staff Gages																					
SG-1	350394.4	12775769.3	-	707.45	707.55	707.65	707.90	708.22	708.18	707.88	707.88	707.25	707.25	708.15	708.18	707.00	706.97	706.93	706.94	706.80	706.92
SG-2	350979.9	12772024.3	-	700.75	701.00	701.20	701.65	702.24	702.28	701.55	701.55	-	-	-	-	699.82	699.79	699.70	699.73	699.50	699.71
SG-3	350360.5	12772101.6	-	703.30	703.30	703.37	703.44	703.85	703.82	703.70	703.55	702.50	702.55	703.50	703.58	-	-	-	-	-	-
SG-4	350988.8	12772385.0	-	701.30	701.55	701.77	702.10	702.62	702.61	702.05	702.08	700.76	700.80	702.46	702.52	700.18	700.17	700.13	700.13	699.93	700.01
SG-5	350076.1	12773475.4	-	702.80	703.00	703.18	703.49	703.88	703.86	703.42	703.40	702.23	702.28	703.68	703.75	701.70	701.70	701.66	701.67	701.48	701.64
Monitoring Wells																					
MW-1	350961.38	12772432.61	708.92	7.25	7.09	6.92	6.72	6.30	6.28	6.64	6.72	7.91	7.86	6.46	6.40	8.46	8.49	8.53	8.55	8.68	8.56
MW-2	350711.55	12772517.19	712.32	10.51	10.37	10.20	9.96	9.54	9.51	9.87	9.96	11.12	11.08	9.68	9.62	11.69	11.72	11.75	11.76	11.88	11.77
MW-3	350339.20	12772701.62	711.66	9.38	9.23	9.05	8.80	8.38	8.35	8.73	8.81	10.01	9.96	8.54	8.47	10.58	10.61	10.65	10.67	10.78	10.67
MW-4	350154.43	12773098.22	713.54	10.79	10.65	10.48	10.26	9.83	9.80	10.05	10.25	11.42	11.37	9.99	9.92	11.99	12.02	12.05	12.06	12.18	12.08
MW-5	350154.29	12773466.74	713.69	10.67	10.52	10.34	10.11	9.69	9.67	10.03	10.11	11.27	11.21	9.85	9.79	11.80	11.82	11.86	11.87	12.00	11.88
MW-6	350846.49	12772491.10	712.07	10.41	10.24	10.07	9.90	9.41	9.38	9.74	9.84	11.02	10.96	9.56	9.49	11.55	11.60	11.63	11.64	11.76	11.65
MW-7	350555.17	12772534.59	712.85	10.85	10.69	10.52	10.29	9.85	9.82	10.20	10.27	11.46	11.41	10.00	9.93	12.02	12.05	12.09	12.10	12.22	12.11
MW-8	350171.40	12772825.18	711.85	9.41	9.25	9.07	8.83	8.38	8.36	8.75	8.83	10.05	10.00	8.57	8.50	10.65	10.67	10.71	10.72	10.86	10.73
MW-9	350900.48	12773169.10	717.09	14.21	14.13	14.02	13.90	13.52	13.44	13.63	13.81	14.90	14.84	13.67	13.58	15.42	15.46	15.49	15.53	15.58	15.55
MW-10	350302.97	12774069.99	712.72	8.18	8.03	7.89	7.65	7.30	7.28	7.60	7.67	8.76	8.71	7.44	8.39	9.25	9.31	9.35	9.36	9.48	9.39
MW-11	350789.24	12774553.73	712.38	7.33	7.20	7.05	6.82	6.45	6.42	6.75	6.83	7.85	7.82	6.57	6.50	8.26	8.31	8.35	8.36	8.46	8.38
MW-12	350726.89	12775210.90	715.35	9.07	8.95	8.85	8.54	8.25	8.25	8.57	8.62	9.62	9.58	8.34	8.33	10.12	10.07	10.12	10.13	10.23	10.15
MW-13	350420.23	12774429.71	714.36	8.93	8.82	8.68	8.45	8.12	8.09	8.37	8.47	9.47	9.43	8.24	8.17	9.93	9.99	10.02	10.05	10.13	10.08
MW-14	350664.31	12774948.40	712.45	6.75	6.62	6.47	6.23	5.89	5.86	6.17	6.26	7.23	7.18	6.00	5.94	7.66	7.71	7.74	7.76	7.85	7.80
MW-15	350412.99	12774893.18	713.83	7.72	7.64	7.50	7.30	7.00	6.95	7.19	7.31	8.27	8.22	7.12	7.05	8.74	8.79	8.82	8.85	8.92	8.89

Notes:

¹ Coordinates are based on the North American Datum of 1983, Michigan South Zone.

² Water elevations at staff gages are based on the National Geodetic Vertical Datum of 1929.

³ Monitoring well depth to groundwater measured in feet. Elevation of the top of the well's inner casing was used as reference.

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Table 2 – Groundwater and Surface Water Elevations

Location	Water Level Elevation / Date																
	03.27.09	03.30.09	04.02.09	04.03.09	04.05.09	04.13.09	04.17.09	06.16.09	06.18.09	06.23.09	06.25.09	09.08.09	09.11.09	09.14.09	09.17.09	09.21.09	09.24.09
Staff Gages																	
SG-1	707.45	707.55	707.65	707.90	708.18	707.88	707.88	707.25	707.25	708.15	708.18	707.00	706.97	706.93	706.94	706.80	706.92
SG-2	700.75	701.00	701.20	701.65	702.28	701.55	701.55	-	-	-	-	699.82	699.79	699.70	699.73	699.50	699.71
SG-3	703.30	703.30	703.37	703.44	703.82	703.70	703.55	702.50	702.55	703.50	703.58	-	-	-	-	-	-
SG-4	701.30	701.55	701.77	702.10	702.61	702.05	702.08	700.76	700.80	702.46	702.52	700.18	700.17	700.13	700.13	699.93	700.01
SG-5	702.80	703.00	703.18	703.49	703.86	703.42	703.40	702.23	702.28	703.68	703.75	701.70	701.70	701.66	701.67	701.48	701.64
Monitoring Wells																	
MW-1	701.67	701.83	702.00	702.20	702.64	702.28	702.20	701.01	701.06	702.46	702.52	700.46	700.43	700.39	700.37	700.24	700.36
MW-2	701.81	701.95	702.12	702.36	702.81	702.45	702.36	701.20	701.24	702.64	702.70	700.63	700.60	700.57	700.56	700.44	700.55
MW-3	702.28	702.43	702.61	702.86	703.31	702.93	702.85	701.65	701.70	703.12	703.19	701.08	701.05	701.01	700.99	700.88	700.99
MW-4	702.75	702.89	703.06	703.28	703.74	703.49	703.29	702.12	702.17	703.55	703.62	701.55	701.52	701.49	701.48	701.36	701.46
MW-5	703.02	703.17	703.35	703.58	704.02	703.66	703.58	702.42	702.48	703.84	703.90	701.89	701.87	701.83	701.82	701.69	701.81
MW-6	701.66	701.83	702.00	702.17	702.69	702.33	702.23	701.05	701.11	702.51	702.58	700.52	700.47	700.44	700.43	700.31	700.42
MW-7	702.00	702.16	702.33	702.56	703.03	702.65	702.58	701.39	701.44	702.85	702.92	700.83	700.80	700.76	700.75	700.63	700.74
MW-8	702.44	702.60	702.78	703.02	703.49	703.10	703.02	701.80	701.85	703.28	703.35	701.20	701.18	701.14	701.13	700.99	701.12
MW-9	702.88	702.96	703.07	703.19	703.65	703.46	703.28	702.19	702.25	703.42	703.51	701.67	701.63	701.60	701.56	701.51	701.54
MW-10	704.54	704.69	704.83	705.07	705.44	705.12	705.05	703.96	704.01	705.28	704.33	703.47	703.41	703.37	703.36	703.24	703.33
MW-11	705.05	705.18	705.33	705.56	705.96	705.63	705.55	704.53	704.56	705.81	705.88	704.12	704.07	704.03	704.02	703.92	704.00
MW-12	706.28	706.40	706.50	706.81	707.10	706.78	706.73	705.73	705.77	707.01	707.02	705.23	705.28	705.23	705.22	705.12	705.20
MW-13	705.43	705.54	705.68	705.91	706.27	705.99	705.89	704.89	704.93	706.12	706.19	704.43	704.37	704.34	704.31	704.23	704.28
MW-14	705.70	705.83	705.98	706.22	706.59	706.28	706.19	705.22	705.27	706.45	706.51	704.79	704.74	704.71	704.69	704.60	704.65
MW-15	706.11	706.19	706.33	706.53	706.88	706.64	706.52	705.56	705.61	706.71	706.78	705.09	705.04	705.01	704.98	704.91	704.94
Groundwater - Surface Water Gradients (ft/ft) (positive gradient indicates groundwater flow to river)																	
MW-5 - SG-5	0.22	0.17	0.17	0.09	0.16	0.24	0.18	0.19	0.20	0.16	0.15	0.19	0.17	0.17	0.15	0.21	0.17
MW-1 - SG-4	0.37	0.28	0.23	0.10	0.03	0.23	0.12	0.25	0.26	0.00	0.00	0.28	0.26	0.26	0.24	0.31	0.35

Notes:

Wells installed during the weeks of February 23, March 2, March 9, 2009.

Reference elevations collected on March 24, 2009.

Staff gages installed during the week of March 23, 2009.

Wells developed during the week of March 30, 2009.

Staff gauge SG-2 was damaged by a high flow event in the River and was not available for the June 2009 sampling event. It was replaced and re-surveyed prior to the September 2009 sampling event.

Staff gauge SG-3 was not read during the September or December 2009 sampling events because ARCADIS did not have property to the private property where SG-3 is located.

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Table 3 — Summary of PCB Samples Collected and Data Received through November 2009

Sample Location	Date	Sample ID	Parameter, Unit, and Concentration							
			Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Total PCB
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Groundwater Surface Water Interface Criteria & RBSLs ¹										
			NA	NA	NA	NA	NA	NA	NA	0.2
Groundwater Samples										
MW-1	4/16/2009	TS40014 [TS40015]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]
	7/1/2009	TS40032 ²	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	7/1/2009	PGW-MW1-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
	9/22/2009	TS40042	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
MW-2	4/16/2009	TS40012	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	7/1/2009	TS40029	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U
	9/22/2009	TS40039	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
MW-3	4/15/2009	TS40010	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	7/1/2009	TS40027 ²	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U
	7/1/2009	PGW-MW3-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
	9/22/2009	TS40037	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
MW-4	4/15/2009	TS40007	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
	6/30/2009	TS40025	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
	9/21/2009	TS40035 ²	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U	0.052 U
	9/21/2009	PGW-MW4-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-5	4/15/2009	TS40008	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
	6/30/2009	TS40024	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	9/21/2009	TS40034 ²	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
	9/21/2009	PGW-MW5-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-6	4/16/2009	TS40013	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
	7/1/2009	TS40030 ² [TS40031]	0.049 U [0.051 U]	0.049 U [0.051 U]	0.049 U [0.051 U]	0.049 U [0.051 U]	0.049 U [0.051 U]	0.049 U [0.051 U]	0.049 U [0.051 U]	0.049 U [0.051 U]
	6/30/2009	PGW-MW6-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
	9/22/2009	TS40040	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
MW-7	4/15/2009	TS40011	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
	7/1/2009	TS40028	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	9/22/2009	TS40038 ²	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
	9/22/2009	PGW-MW7-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-8	4/15/2009	TS40009	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
	7/1/2009	TS40026	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
	9/21/2009	TS40036	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
MW-9	4/17/2009	TS40016	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	7/2/2009	TS40033	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
	9/22/2009	TS40041 ²	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	9/22/2009	PGW-MW9-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-10	4/14/2009	TS40005	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
	6/30/2009	TS40023 ²	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
	6/30/2009	PGW-MW10-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
	6/30/2009	PGW-MW10-03	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
	9/23/2009	TS40046	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]	0.048 U [0.047 U]

See page 2 for notes.

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Former Plainwell Impoundment TCRA
Quarterly Post-Construction Groundwater Monitoring

Table 3 — Summary of PCB Samples Collected and Data Received through November 2009

Sample Location	Date	Sample ID	Parameter, Unit, and Concentration							
			Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Total PCB
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Groundwater Surface Water Interface Criteria & RBSLs ¹										
			NA	NA	NA	NA	NA	NA	NA	0.2
Groundwater Samples (cont'd)										
MW-11	4/14/2009	TS40002 [TS40003]	0.048 U [0.049 U]	0.048 U [0.049 U]	0.048 U [0.049 U]	0.048 U [0.049 U]	0.048 U [0.049 U]	0.048 U [0.049 U]	0.048 U [0.049 U]	0.048 U [0.049 U]
	6/29/2009	TS40019	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
	9/23/2009	TS40044 ²	0.047 U [0.048 U]	0.047 U [0.048 U]	0.047 U [0.048 U]	0.047 U [0.048 U]	0.047 U [0.048 U]	0.047 U [0.048 U]	0.047 U [0.048 U]	0.047 U [0.048 U]
	9/23/2009	PGW-MW11-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-12	4/13/2009	TS40000	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U
	6/29/2009	TS40017 ²	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
	6/29/2009	PGW-MW12-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
	6/29/2009	PGW-MW12-02	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
	9/23/2009	TS40043	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
MW-13	4/14/2009	TS40004	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	6/30/2009	TS40020 [TS40021]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]
	9/23/2009	TS40048 ²	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
	9/23/2009	PGW-MW13-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-14	4/13/2009	TS40001	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
	6/29/2009	TS40018	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
	9/24/2009	TS40050 ²	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
	9/24/2009	PGW-MW14-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
MW-15	4/14/2009	TS40006	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
	6/30/2009	TS40022	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
	9/24/2009	TS40049 ²	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
	9/24/2009	PGW-MW15-01	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
Surface Water Samples										
SG-5	4/13/2009	TS31000	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	4/17/2009	TS31001 [TS31002]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.027 J [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.027 J [0.048 U]
	6/29/2009	TS31003	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U
	7/2/2009	TS31004 [TS31005]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]	0.048 U [0.048 U]
	9/21/2009	TS31006	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
	9/24/2009	TS31007 [TS31008]	0.051 U [0.050 U]	0.051 U [0.050 U]	0.051 U [0.050 U]	0.051 U [0.050 U]	0.051 U [0.050 U]	0.051 U [0.050 U]	0.051 U [0.050 U]	0.051 U [0.050 U]

Notes:

1 - Analytical results compared to applicable Part 201 generic Groundwater-Surface Water Interface criteria and Part 213 RBSLs provided in MDEQ's RRD Operational Memorandum No. 1 (Table 1, Column #3).

2 - Split of the sample collected by MDEQ. Samples analyzed by Northeast Analytical Labs.

* Duplicate samples are shown in brackets.

* Samples analyzed by Test America Laboratory.

* MDEQ split samples shown in italics.

B - Indicates an estimated value between the instrument detection limit and the Reporting Limit (RL).

J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.

U - Compound analyzed but not detected at a concentration above the reporting limit.

MDEQ - Michigan Department of Environmental Quality

MW - Monitoring well

NA - Not Available

PCB - polychlorinated biphenyl

RBSL - Risk Based Screening Level

RRD - Remediation Redevelopment Division

SG - Staff Gauge

µg/L - microgram per liter

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Former Plainwell Impoundment TCRA
Quarterly Post-Construction Groundwater Monitoring

Table 4 — Summary of Inorganic Samples Collected and Data Received through November 2009

Sample Location	Date	Sample ID	Parameter, Unit, and Concentration									
			Calcium	Magnesium	Potassium	Sodium	Alkalinity	Chloride	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
			µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Groundwater Samples												
MW-1	4/16/2009	TS40014 [TS40015]	121,000 [129,000]	36,300 [38,600]	3,100 B [3,220 B]	30,000 [31,500]	320 [310]	44 [43]	180 [180]	667 [691]	7.4 [7.5]	15.4 [14.5]
	7/1/2009	TS40032	129,000	34,100	4,120 B	38,600	320	59	150	653	7.1	14.1
	9/22/2009	TS40042	110,000 J	26,700 J	2,660 B	56,100 J	270	91	86	583	5.2	6.2
MW-2	4/16/2009	TS40012	142,000	29,300	1,700 B	53,000	350	93	110	706	6.1	20.1
	7/1/2009	TS40029	160,000	29,200	2,090 B	58,400	350	110	140	765	5.9	23
	9/22/2009	TS40039	150,000 J	29,300 J	2,010 B	65,500 J	320	120	130	739	5.6	27.7
MW-3	4/15/2009	TS40010	121,000	29,500	1,880 B	74,900	320	120	82	665	3.7	21.3
	7/1/2009	TS40027	122,000	29,900	2,090 B	63,500	320	120	89	712	3.4	13.1
	9/22/2009	TS40037	127,000 J	30,900 J	2,220 B	66,900 J	330	110	81	664	3.9	13.8
MW-4	4/15/2009	TS40007	115,000	27,700	2,120 B	73,400	340	130	43	655	4.8	11.7
	6/30/2009	TS40025	127,000	29,600	2,560 B	74,000	360	140	57 B	708	2.9	16.7
	9/21/2009	TS40035	125,000 J	29,600 J	2,080 B	74,900 J	360	130	57	671	5.4	14
MW-5	4/15/2009	TS40008	141,000	32,100	2,810 B	53,800	310	80	130	746	6.7	8.9
	6/30/2009	TS40024	168,000	35,400	3,140 B	51,000	350	80	170	833	5.7	13.1
	9/21/2009	TS40034	157,000 J	34,400 J	3,060 B	57,500 J	370	91	150	811	7.3	13
MW-6	4/16/2009	TS40013	119,000	27,800	1,940 B	68,400	311	110	67	639	4.6	16.4
	7/1/2009	TS40030 [TS40031]	123,000 [124,000]	25,400 [25,700]	1,930 B [2,170 B]	56,300 [56,600]	300 [300]	110 [100]	94 [96]	615 [613]	5.1 [5]	19.3 [19.5]
	9/22/2009	TS40040	114,000 J	23,200 J	1,770 B	63,400 J	270	120	80	583	5.1	17.1
MW-7	4/15/2009	TS40011	174,000	28,300	2,000 B	55,200	360	110	140	777	6.9	12.9
	7/1/2009	TS40028	141,000	26,500	2,170 B	59,900	340	110	99	671	4.6	11.8
	9/22/2009	TS40038	129,000 J	28,000 J	1,960 B	67,900 J	300	140	88	662	4.3	15.8
MW-8	4/15/2009	TS40009	105,000	27,100	2,100 B	80,300	300	160	42	625	2.6	9.1
	7/1/2009	TS40026	115,000	28,900	2,290 B	88,800	290	170	73	704	1.9	9.5
	9/21/2009	TS40036	104,000 J	26,600 J	2,070 B	94,100 J	280	160	57	637	2.7	8.9
MW-9	4/17/2009	TS40016	92,100	24,600	2,000 B	70,900	250	140	35	574	2	6.6
	7/2/2009	TS40033	90,000	23,100	2,400 B	62,700	250	120	26	515	1.5	6.1
	9/22/2009	TS40041	87,400 J	23,000 J	2,200 B	76,500 J	250	130	28	526	2.1	5.8
MW-10	4/14/2009	TS40005	198,000	29,500	1,120 B	51,100	420	89	160	918	16.2	25.4
	6/30/2009	TS40023	193,000	27,000	1,620 B	48,500	370	89	170	921	12.3	29.4
	9/23/2009	TS40046	160,000 J [159,000 J]	22,900 J [22,900 J]	1,350 B [1,310 B]	58,300 J [58,300 J]	310 [310]	110 [110]	140 [140]	754 [754]	12.2 [11.9]	19.9 [20.8]

See page 2 for notes.

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Former Plainwell Impoundment TCRA
Quarterly Post-Construction Groundwater Monitoring

Table 4 — Summary of Inorganic Samples Collected and Data Received through November 2009

Sample Location	Date	Sample ID	Parameter, Unit, and Concentration									
			Calcium	Magnesium	Potassium	Sodium	Alkalinity	Chloride	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
			µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Groundwater Samples (cont'd)												
MW-11	4/14/2009	TS40002 [TS40003]	110,000 [109,000]	27,300 [27,300]	1,930 B [1,760 B]	59,700 [59,200]	310 [300]	100 [98]	64 [66]	619 [610]	4.5 [4.5]	13.6 [14.2]
	6/29/2009	TS40019	116,000	27,800	2,360 B	56,000	290	110	83	615	3.4	15.4
	9/23/2009	TS40044	105,000 J [103,000 J]	24,900 J [24,500 J]	2,020 B [2,060 B]	53,800 J [53,200 J]	270 [280]	82 [83]	62 [63]	535 [528]	3.7 [4.1]	13.5 [13.5]
MW-12	4/13/2009	TS40000	152,000	27,700	3,450 B	11,600	320	28	130	657	20.6	0.6
	6/29/2009	TS40017	190,000	33,700	7,490	14,300	460	21	100	749	19.5	0.5 U
	9/23/2009	TS40043	98,600 J	23,300 J	2,590 B	24,100 J	290	47	34	437	7.8	5.2
MW-13	4/14/2009	TS40004	92,200	21,700	1,600 B	69,500	280	120	29	568	2.5	13.3
	6/30/2009	TS40020 [TS40021]	93,800 [96,000]	21,400 [22,100]	1,650 B [1,830 B]	52,700 [54,300]	260 [260]	91 [92]	38 [39]	503 [516]	2 [2.2]	11.7 [11.8]
	9/23/2009	TS40048	93,200 J	21,900 J	1,770 B	67,000 J	270	120	27	508	2.5	14
MW-14	4/13/2009	TS40001	111,000	23,800	699 B	27,000	210	42	150	553	5.2	17
	6/29/2009	TS40018	95,300	19,000	5,000 UB	27,700	230	37	87	438	3.2	13.7
	9/24/2009	TS40050	92,100 J	22,100 J	1,180 B	41,000 J	250	66	50	446	3.3	12.9
MW-15	4/14/2009	TS40006	92,200	25,700	1,540 B	42,100	280	43	63	495	3.1	10.1
	6/30/2009	TS40022	99,600	25,700	2,220 B	46,300	280	96	35	506	1.2	9.5
	9/24/2009	TS40049	107,000 J	26,900 J	2,680 B	74,400 J	270	130	55	574	2.5	11
Surface Water Samples												
SG-5	4/13/2009	TS31000	73,300	19,600	2,090 B	20,400	200	39	32	361	7.9	7.6
	4/17/2009	TS31001 [TS31002]	75,500 [74,300]	20,600 [20,300]	2,040 B [2,050 B]	22,400 [22,200]	210 [210]	43 [43]	34 B [34]	371 [370]	7.1 [7.5]	7.7 [8]
	6/29/2009	TS31003	79,700	21,000	2,720 B	23,300	220	44	27	386	7.1	15.7
	7/2/2009	TS31004 [TS31005]	84,800 [83,900]	23,000 [22,800]	2,680 B [2,620 B]	27,500 [27,200]	240 [250]	51 [51]	29 [28]	407 [395]	6.2 [6.3]	14.1 [13.9]
	9/21/2009	TS31006	76,000	24,300	3,020 B	36,400	220	65	33	391	4.7	2.8
	9/24/2009	TS31007 [TS31008]	78,400 J [77,300 J]	24,900 J [24,600 J]	2,810 B [2,710 B]	36,000 J [35,600 J]	230 [230]	66 [61]	35 [32]	396 [407]	4 [4.2]	4.6 [4.5]

Notes:

* Duplicate samples are shown in brackets.

* Samples analyzed by Test America Laboratory.

B - Indicates an estimated value between the instrument detection limit and the Reporting Limit (RL).

J - The compound was positively identified; however, the associated numerical value is an estimated concentration only.

U - Compound analyzed but not detected at a concentration above the reporting limit.

MW - Monitoring well

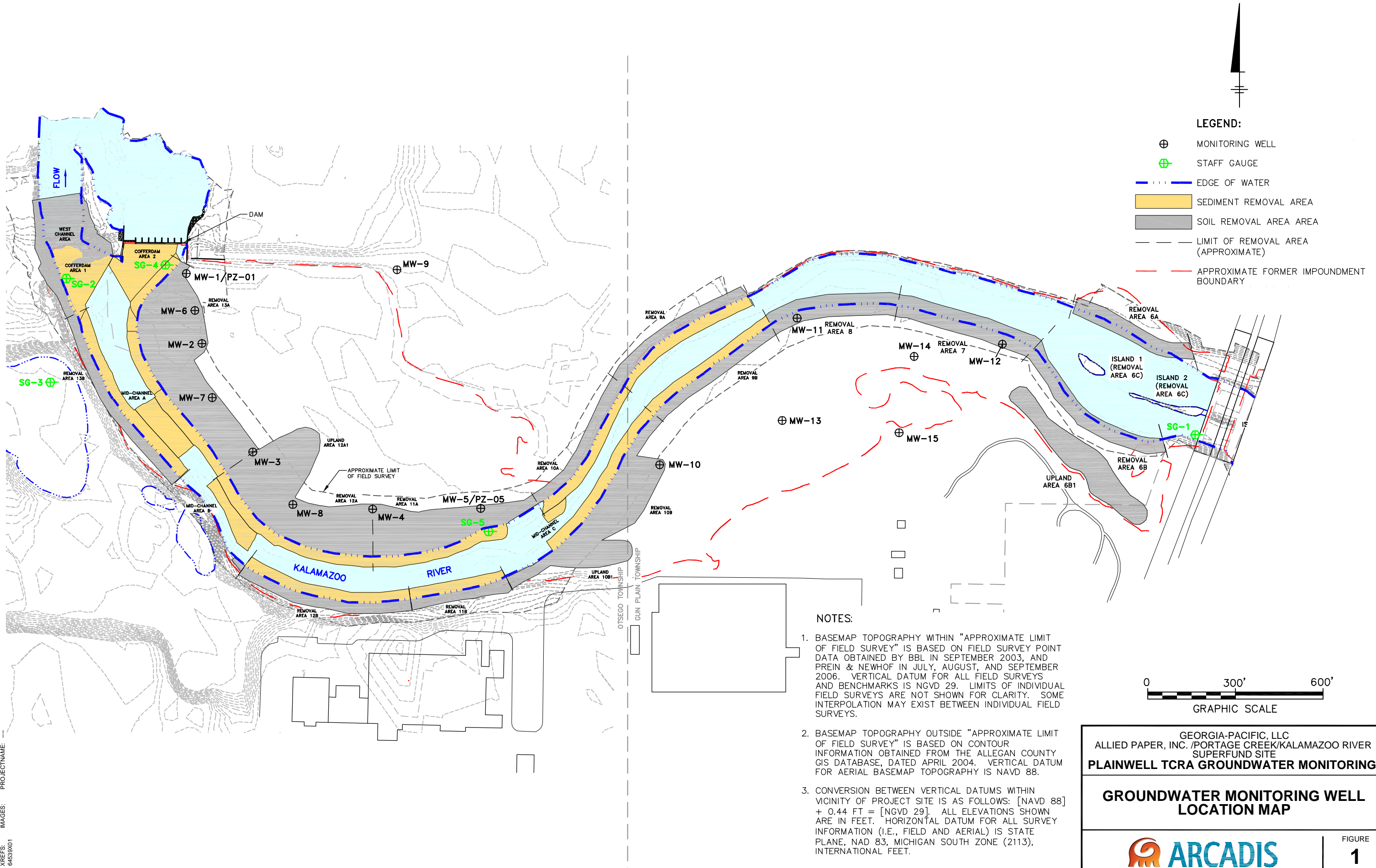
SG - Staff Gauge

mg/L - milligram per liter

µg/L - microgram per liter

Figure

CITY: SYRACUSE, NY GROUP: ENVCAD-141 DB: PRL RCA PP: B. GUILLETTE PM: S. GARBACIAK TM: D. COWIN LYR: ON*-OFF-REF
G:\ENVCAD\SYRACUSE\ACT\190646390000\005000\DWG\TCRA\64639B01.DWG LAYOUT: 1/30/2009 8:34 AM ACADVER: 17.05 (LMS TECH) PAGES: 17 OF 17
XREFS: 64639B01
IMAGES: PROJECTNAME: 64639B01
PLOTSTYLETABLE: PLT\FULL CTD PLOTTED: 12/1/2009 2:50 PM BY: POSENAUER, LISA



Attachment 1

Groundwater Monitoring Well
Construction Field Notes

Projects

PAVE. COUNCIL (312) 286-8821. CELL
(312) 332-4937 x11 OFFICE

STEVE BOOM (CAM)

475 12TH STREET
ALABAMA MT 49080

COOL. CALL
1-877-999-1272
959.4927

11/10/08

DAVEY LOG

WORKING 32ND, LIGHT SMOOD

0600 RICK SUTHERS HOTEL

0650 RICK @ SITE @ FORMER PLANT SURVEILLANCE MONITOR

0700 SALLY/MEETING

0745-0900 RICK SUTHERS GIVES ME A TOUR OF MONITORING EQUIP
LOCATIONS

0930-1030 COOL/BEVERLY CALL

1100 STEVE BOOM ON SITE

1045-1100 TALKING SALLY/MEETING w/ MARECO, REVIEW DRILLING PROGRAMS.
GARY SWIFT/JOHN OLSON

1300 CONSUMERS ENERGY/MEETING RE UTILITIES (GAS LINES)

1410-1530 TRIMMING GROUT MW-12, PUMP BORING, STEAM CURED AXES,
MOBILIZING TO MW-14

1615-1715 TRIMMING GROUT MW-14, HIGH PRESSURE STEAM CURED AXES,
TEOLUX, MOBILIZING TO MW-11, WHERE RIG/STEAM CRACKER ETC.

1715 MARECO/ALAN @ CAM OFF SITE

1745 RICK @ HOTEL/SCW/EMAIL NOTES.

(12)

11/10/08

MW-12 (Pilot Box 26)

(208)

ARCADIS

RWD KIRK

MARECO

GAR/SWA, JOHN OLSON (JM STEVE BOYD)

EQUIPMENT:

CME SSLC TRUCK MOUNTED RIG, 4 1/4" IDHSA, 2"x2"
SPLITSPOONS, 30" PAUL, 140 LB. AIR HAMMER.

TIME	INT (hr)	ACC (hr)	BLIND (ft)	(W)	COMMENTS
1328	0-2	1-6.5'	2-3-3-5	6	
1333	2-4	1-3'	5-4-2-2	6	Σ ~3' OBS
1344	4-6	0-9'	1-1-1-2	2	
1349	6-8	1-4'	7-8-10-12	18	
1356	8-10	1-0'	12-10-6-5	16	
1400	10-12	1-0'	3-3-3-3	6	
1404	12-14	0-8'	3-3-3-6	6	

- END of Boring @ 14' OBS. Boring THRU W/ 6' OBS
TO 6' OBS w/ ~20 GAUGES BENTONITE / 5% 75% PORTLAND CEMENT.

* ~7'-14' HIGH K SANDS/GRAVELS

11/10/08

MW-12 (Pilot Box 26)

(208)

INTERVAL

DESCRIPTION

0-1.15'	DARK BROWN ORGANIC SILT, TRACE F SAND, DAMP.
1.15-1.65'	LIGHT BROWN FINE SAND, TRACE ORGANICS (SILTS), TRACE SILT, LOOSE, MOIST.
2.0'-2.2'	SAA, SATURATED.
2.2'-2.65'	DARK GRAY SILT/CLAY, MODERATELY SOFT, WET.
2.65'-2.85'	GRAY BROWN F SAND, TRACE SILT, TRACE SILTS, WET.
2.85'-3.2'	DARK BROWN SILT F SAND, TRACE HIGHLY DECOMPOSED ORGANICS, WET.
3.2'-3.3'	GRAY SAND FROM SAND, TRACE C SAND, TRACE SILT, SATURATED.
4.0'-4.3'	SAA, TRACE SILTS.
4.3'-4.8'	DARK GRAY ORGANIC SILT, TRACE CLAY, TRACE HIGHLY DECOMPOSED ORGANICS, SLIGHT COARSE, WET.
4.8'-4.9'	DARK GRAY SILT F SAND, WET.
6.0'-6.5'	DARK BROWN (CLAY) SILT, TRACE F SAND, TRACE SILTS, WET.
6.5'-6.75'	GRAY FINE SAND, TRACE FINE GRAVEL, TRACE SILT, WET.
6.75'-6.85'	ORANGE BROWN SILT F SAND, WET.
6.85'-7.4'	GRAY SAND FROM GRAVEL, TRACE F SAND, TRACE SILT, SATURATED.
8.0'-9.0'	OLIVE BROWN SILT F FINE SAND, LITTLE FINE GRAVEL, LOOSE, SATURATED.
10.0'-11.0'	OLIVE BROWN FINE SAND, LITTLE FINE GRAVEL, TRACE SILT, LOOSE, SATURATED.
12-12.8'	SAA.

11/10/08

MWD-14

Pilot Boring

(25)

ARCADIS

Ron Kutz

MATECO

GARY SWIFT, JOHN OISOW CDM, STEVE BOOM

EQUIPMENTCME SS LC, TRAC MOUNTED Rig, 4 1/4" ID HSA,
2"x2" SPLITSPUD, 30' Fall, 140 LB AUTOMATED

TIME	INT (ft)	ACC (ft)	BLOW (6")	N	COMMENTS
1539	0-2	1.7'	2-2-2-2	4	
1543	2-4	1.3'	1-1-1-1	2	
1546	4-6	1.6'	1-1-1-2	2	± 4.5' FEB ANALYSIS
1552	6-8	1.0'	4-4-4-4	8	
1556	8-10	1.0'	NA - DUSTY	N/A	
1600	10-12	0.9'	2-3-3-4	6	
1605	12-14	1.0'	2-3-3-4	6	
1608	14-16	0.7'	3-3-3-5	6	

- END OF BORING @ 16' BGS. BORING TRIGGERED GRAY TO
GRAVEL W/ ~ 20 GRAIN 25 TYPE 1 PORTLAND / 5% REINFORCING
GRAIT.

* ~ 6-16' HIGH K GRAVELS / SANDS

11/10/08

MWD-14 Pilot Boring

(25)

INTERVALDESCRIPTION

0-0.25'	DARK BROWN SILT, TRACE F SAND, TRACE ORGANICS (ROOTS), DRY
0.25-0.35'	BROWN FINE SAND, TRACE SILT, LOOSE, DRY
0.35-0.55'	LIGHT GRAY CLAY SILT, DRY
0.55-1.15'	DARK BROWN ORGANIC SILT, TRACE ORGANICS (ROOTS), DRY
1.15-1.7'	DARK BROWN SILT F SAND, TRACE ORGANICS (HONEY DEW), MOIST / WET
2.0'-3.0'	SAA, WET
3.0'-3.3'	GRAY / BROWN F SAND, TRACE MIOC SAND, TRACE SILT, WET
4.0'-4.85'	BROWN SILT, TRACE F SAND, WET
4.85-5.6'	LIGHT GRAY BROWN F SAND, LITTLE SILT, TRACE MIOC SAND, TRACE FINE GRAVEL, SATURATED * (LIGHT GRAY SILT IN SAND / GRAVEL MIOC)
6.0'-7.0'	GRAY BROWN FINE SAND, TRACE FINE GRAVEL, TRACE SILT, SATURATED
8.0'-9.0'	SAA, GRAY TO DARK GRAY @ ~ 8.7' BGS
10.0'-10.9'	DARK GRAY FINE GRAVEL, LITTLE FINE SAND, TRACE SILT, SATURATED
12.0'-13.0'	SAA
14.0'-17.7'	SAA

11/11/08 Daily Log 12

WEATHER OVERCAST, 40°S

0630 DRK on Site, prepare for today's drilling activities

0730-0800 Safety Meeting

0800-0835 DRK, ES: Rich (TERRA) GO TO QPW TO START THE
 WORK TO GET H2O FOR PERKINS, AND 3" HYDRA-MANAGER

0830 MATCO GETTING H2O FROM OTSEGO TOWNSHIP WATER BAY
 BEHIND WALWART.

0930-1015 TRUMME GROUT MW-11, MOBILIZE TO MW-13

1100-1200 TRUMME GROUT MW-13, HIGH PRESSURE STEAM CRAW AUGER/
 TOOL-JB, MOBILIZE TO MW-15

1200-1300 MATCO LUNCH, DRK/ES SPEAK TO DRUG C. RE BUILDING
 UP AREAS TO FACILITATE WELL INSTALLATIONS. DRUG ALSO
 ASKS ME TO START MW-14 (4-6') : MW-13 (6-8')
 FOR Pb ANALYSIS 24 METERS

1400 DRK SPEAKS w/ MATCO RE USING CENTRALING WHILE DRILLING TO
 AVOID "STUFF" IN SAMPLES. MATCO TO TR/ @ NEW LOCATION
 MW-10

1400-1500 TRUMME GROUT MW-15, STEAM CRAW AUGERS, MOBILIZE TO
 MW-10.

1530-1800 TRUMME GROUT MW-10 PILOT BOREHOLE, HIGH PRESSURE STEAM
 CRAW RIG/AUGERS/TOOL-JB, MOBILIZE RIG/EQUIP TO NORTH
 SIDE OF RIVER TO CONTINUE PILOT BOREHOLE

1930-2045 CALL w/ DRUG C.

13

11/12/08 Daily Log 12

WEATHER OVERCAST, PERIODIC RAIN, 30°/40°S

0630 DRK & PLANNING OFFICE, prepare for today's PILOT BOREHOLE
 ACTIVITIES.

0730 Safety Meeting

0800 ARCADIS/MATCO MEET w/ TERRA RE BUILDING PLATFORMS (PDS)
 FOR MONITORING WELL CONSTRUCTION IN AREAS WHERE Σ IS NEAR
 SURFACE.

0815-1010 MATCO CONTINUES MOBILIZING EQUIPMENT TO NORTH SIDE.

1000-1030 TRUCK & TRAILER STUCK IN MUD - USE RIG TO GET UNSTUCK.

1120-1200 TRUMME GROUT MW-07

1200-1300 LUNCH/COOKHOUSE CALL

1200 Conf. Call & EXTEND DEPTH 16' BEYOND Σ & REMAINING PILOT BOREHOLE
 LOCATIONS.

1800 ARCADIS/MATCO OFF SITE

12.5

11/11/08 MUO-11 Pilot Borehole (208)
 ACADES Ron Kuhn
 MAIECO GAE/SWIFT, JOHN OLSON
 CRM STEVE BOOM UPSTON ELMER VAN WAGNER
 EQUIPMENT CME SSLC TRACK MOUNTED RIG, 4 1/4" IS 15A, 2"x2"
 SPLITSPODS, 30" PAUL, 1407B AUTO HAMMER

TIME	INT (ft)	LOG (ft)	BLOWS (6")	(N)	COMMENTS
0856	0-2	1-3'	2-3-5-9	8	
0902	2-4	1-6'	2-2-2-2	4	13'
0909	4-6	0-7'	1-1-1-1	2	
0916	6-8	0-5'	1-1-1-1	2	
0918	8-10	0-6'	3-3-4-6	7	
0922	10-12	1-0'	7-4-7-6	11	
0925	12-14	0-7	3-3-3-3	6	

14' 16" (20)

- END of Borehole @ 14' BGS. Borehole Terminating Ground
 TO GRAVEL ~ 20 (various types of pebbles) 5%
 BENTONITE GROUT.

* 4.35'-14' HIGH K SANDS/GRANULS

11/11/08 MUO-11 Pilot Borehole (209)

INTERVAL	DESCRIPTION
0-0-15	DARK BROWN ORGANIC SILT, TRACE ORGANICS, DRY
0-15-10'	GRAY SILTY CLAY, MOIST
1-0-1-5'	BROWN FINE SAND, TRACE SILT, LOOSE, MOIST
2-0'-2-65'	GRAY SILTY CLAY, TRACE ORGANICS, MOIST
2-65-2-9'	LIGHT BROWN F SAND, TRACE SILT, MOIST
2-9'-3-6'	DARK GRAY SILTY CLAY, TRACE HIGHLY ORGANIC, ORGANICS, MOIST, ODOR.
4-0'-4-35'	SAND
4-35-4-7'	GRAY BROWN FINE SAND, TRACE C SAND, TRACE SILT, TRACE SILTS, SATURATED.
6-0-6-5'	SAND, LITTLE SILT
8-0-8-6'	GRAY BROWN FINE SAND, TRACE C SAND, TRACE FINE GRAVEL, TRACE LIGHT GRAY SILT IN TRAP OF SAND, TRACE SILTS, LOOSE, SATURATED.
10-0'-10-7'	SAND
10-7-11-0'	DARK GRAY BROWN FINE SAND, LITTLE F GRAVEL, LOOSE, SATURATED.
12-0'-12-7'	GRAY BROWN FINE SAND, TRACE FINE GRAVEL, TRACE SILT, LOOSE, SATURATED.

11/11/08

MW-13 Pilot Borehole

(DS)

ARCADIS

ROD KUDO

MATECO:

GAR/SWIFT, JOHN OLSON

COM

STEVE BOOM WESLEY CLMER VAN WAMER

EQUIPMENT

ONE SS LC TRUCK MOUNTED RIG, 4 1/4" ID HSA, 2"x2"
SPLITS, DOORS, 30" FAI, 140 LB AUTOHAMMER

TIME	INT (ft)	REC (ft)	Flows (in)	N	COMMENTS
1012	0-2	1.4'	2-2-1-2	3	
1022	2-4	0.4'	2-2-2-2	4	
1027	4-6	0.7	1-1-1-1	2	
1029	6-8	0.6'	1-1-4-5	5	PHOTO B241 PES ANALYSIS
1033	8-10	0.6'	4-4-7-9	11	PHOTO B242
1038	10-12	0.7'	7-9-14-15	23	PHOTO B243
1045	12-14	0.2'	5-6-8-10	14	
1047	14-16	0.9'	3-4-6-6	10	
1051	16-18	0.5'	4-7-3-5	10	

- END of Borehole 18' BGS. Borehole terminating GRAVEL TO
GRAVEL W ~ 25 GALLONS TYPE I PORTLAND/5% BOUNDING GRAT.

* 6.0'-18.0' HIGH K GRAVELS/SANDS

11/11/08

MW-13 Pilot Borehole

(DS)

INTERVAL

DESCRIPTION

0-0.1'	DARK BROWN OLIVAC SILT, TRACE OLIVAC, DAMP
0.1-0.3'	ORANGE BROWN FINE SAND, LITTLE CSND, TRACE GRAVEL, LOOSE, DAMP
0.3-0.55'	GRAY BROWN CLAY/SILT, TRACE F SAND, DAMP
0.55-0.85'	GRAY BROWN F SAND, TRACE SILT, DAMP
0.85-1.4'	OLIVE BROWN SANDY CLAY, TRACE HIGHLY REDUCED NATURAL OLIVAC, MOIST
2.0'-2.4'	SAA
4.0'-4.7'	SAA, GRADING TO DARK GRAY BROWN (CLAY) ~ 4.5', GRAY/STAIN FROM SAND SEAM ~ 4.5' BGS, MOIST
6.0'-6.6'	GRAY BROWN FROM GRAVEL, LITTLE FINE SAND, TRACE LIGHT GRAY SILT THROUGHOUT, LOOSE, SATURATED. * LIGHT GRAY SILT CALCAREOUS IN NATURAL NITRIFICATION *
8.0'-8.6'	SAA
10.0'-10.7'	SAA, TRACE LIGHT GRAY SILT DISCOLORATION, GRAY/CALCAREOUS AGGREGATES ON GRAVEL
12.0'-12.2'	GRAVEL TO TIP OF STEE
14.0'-14.9'	GRAY BROWN FINE SAND, LITTLE FINE GRAVEL, TRACE SILT, LOOSE, SATURATED
16.0'-16.5'	GRAY BROWN FROM GRAVEL, LITTLE FINE SAND, TRACE SILT, LOOSE, SATURATED

11/11/08

MW-15 Pilot Borehole

②

ARCADIS

ROND KIRBY

MATECO

GAR/SWIFT, JOHN O'LEARY

CAM

STEVE BOOM WESTON ELMER VAN WAGEN

EQUIPMENT

GESS LC TRACK MOUNTED R16, 4 1/4" ID HSA, 2" E2
SPLITSPODES, 30" PH1, 140 LB. AUTOMAMMER

TIME	INT (ft)	REC (ft)	BLAND (G)	N	COMMENTS
1313	0-2	1.5'	1-2-2-3	4	
1321	2-4	0.9'	2-2-2-3	4	
1326	4-6	0.5'	1-2-3-3	5	
1329	6-8	0.8'	3-3-4-4	7	7'
1332	8-10	0.8'	3-5-4-4	9	
1336	10-12	1.2'	3-4-4-7	8	
1342	12-14	0.6'	3-6-4-4	10	
1346	14-16	0.4'	2-3-3-4	6	
1351	16-18	0.0'	3-3-3-4	6	

- END of Borehole @ 18' BGS. Borehole TRIMMED TO GRADE w/
~ 25 GALS TYPE I PORTLAND 5% PORTLAND CEMENT.

* 6.2'-18.0' HIGHER IC GRAVEL/SANDS

11/11/08

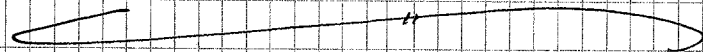
MW-15 Pilot Borehole

②

INTERVAL

DESCRIPTION

0-0.2'	DARK BROWN ORGANIC SILT, TRACE MEDIAN/DEGRADED ORGANICS, DAMP
0.2'-1.05'	GRAY BROWN CLAY/SILT, TRACE F SAND, TRACE ORGANICS, DAMP.
1.05'-1.5'	ORANGE BROWN F SAND, TRACE SILT, DAMP.
2.0'-2.35'	SAA
2.35'-2.9'	ORANGE F SAND, TRACE SILT, TRACE M GRAVEL, MOIST.
4.0'-4.5'	SAA, SATURATED
6.0'-6.2'	SAA
6.2'-6.8'	GRAY BROWN FINE SAND, LITTLE C SAND, TRACE FINE GRAVEL, TRACE SILT, LOOSE, SATURATED.
8.0'-8.8'	GRAY BROWN FINE SAND, LITTLE FINE GRAVEL, TRACE SILT, SATURATED
10.0'-11.2'	SAA
12.0'-12.6'	SAA, GRAVEL TO DARK GRAY/C ~ 12.4' BGS
14.0'-14.4'	DARK GRAY F GRAVEL, LITTLE FINE SAND, SATURATED
16.0'-18.0'	(SILT)



11/11/08

MW-10 Pilot Boring

(PDE)

ARCADIS

ROD KUND

INATECO

GAR/ SCHA, JOHN OLSON

CSMSTEVE BOOM WESTON ELMER VANWAGNEREQUIPMENTCME SS LC TRUCK MOUNTED RIB, 4 1/4" DS HSA, 2"x2"
SPURTSPODS, 30" PAUL, 140 LB AUTOHAMMER

TIME	INT (ft)	ACC (ft)	BLIND (in)	N	Comments
1500	0-2	1.3'	2-3-4-4	7	
1506	2-4	1.0'	1-1/12"-1	1	
1509	4-6	1.0'	2-1-1-1	2	SL 5'
1514	6-8	1.1'	7-5-13-6 ^{1 1/4}	18 w/a	
1517	8-10	0.4'	7-5-13-8	18	
1520	10-12	0.8'	7-4-4-7	8	PHOTO 8244
1527	12-14	0.9'	4-5-7-9	12	
1529	14-16	0.7'	3-4-4-6	8	

- END OF BORING @ 16' BGS. BORING TRIMMING GRATES TO GRADE
W/ ~20 GALLONS TYPE I PORTLAND / 5% BLENDED GROUT.

* 6.0' - 16' HIGH K GRAVEL/SANDS

11/11/08

MW-10 Pilot Boring

(PDE)

INTERVALDESCRIPTION

0-0.2' DARK BROWN ORGANIC SILT, TRACE F SAND, TRACE ORGANICS, DAMP

0.2-1.3' GRAY BROWN FINE SAND, LITTLE C SAND, TRACE FINE GRAVEL,
TRACE SILT, LOOSE, DAMP.

2.0'-2.35' SAA

2.35-3.0' GRAY BROWN GRASS TO DARK GRAY SILTY CLAY, TRACE ORGANICS (HIGHLY
ORGANICS), DAMP.

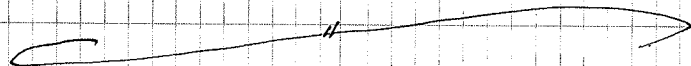
4.0'-5.0' DARK GRAY BROWN F SAND, TRACE LITTLE SILT, TRACE SILTS, SATURATED

6.0'-7.1' LIGHT GRAY BROWN SILTY FINE GRAVEL, LITTLE FINE SAND, LOOSE,
SATURATED * LIGHT GRAY CALCAREOUS DIS COLOURED THROUGHOUT,
NITRIC ACID +.

8.0'-8.4' SAA, POOR RECOVERY DUE TO C CHANNEL IN TOP OF SHAFT

10.0'-10.8' LIGHT GRAY BROWN FINE GRAVEL, LITTLE FINE C SAND, TRACE SILT, SATURATED
LIGHT GRAY CALCAREOUS SILT THROUGHOUT, NITRIC +12.0'-12.9' DARK GRAY BROWN FINE SAND, LITTLE FINE GRAVEL, TRACE SILT,
LOOSE, SATURATED.

14.0'-14.7' SAA



11/12/08

MW-57 PILOT BORIS

(20)

ARCADIS

ROW KUH

MATECO

GAR/SWIFT, JOHN O'CONNOR

CAM

STEVE BOOM

WESTON

ETIMER VAN WAGNER

EQUIPMENT

CMESS LC TRUCK MOUNTED RIG, 4 1/4" IS HSA, 2" L2'

SPLITSPOONS, 1401B AUTOMANUAL, 30" FAH

TIME	INT (ft)	ACC (ft)	BLANDS (6")	N	COMMENTS
1045	0-2	1.8'	3-1-3-3	4	
1050	2-4	1.5'	2-2-2-2	4	
1053	4-6	0.6'	2-2-2-2	4	▼ 6'
1058	6-8	0.4'	1-2-1-1	3	NO RECORD 2"
1106	8-10	0.7'	1-2-1-1	3	TRIED 3" SPAND
1109	10-12	1.1'	2-2-3-3	5	
1115	12-14	0.7'	2-2-3-4	5	
1118	14-16	1.2'	3-4-2-5	6	

- END OF BORIS @ 16' BAS. BORIS TURNED GRATED TO
GRADE W/ ~ 25 GAL FUEL AND 5% BLENDED QUICK
GROUT.

* 6-16' HIGH K SANDS/GRANIS

11/12/08

MW-57 PILOT BORIS

(20)

INTERVALDESCRPTION

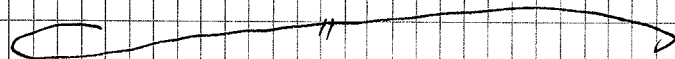
0-1.8' GRAY BROWN SILT/CLAY, TRACE ORGANICS (VEGETATION), SAND *

2.0'-2.25' SAA *

2.25'-3.05' DARK BROWN F SAND, TRACE SILT, LOOSE, DRY

3.05'-3.5' ORANGE BROWN F SAND, TRACE SILT, LOOSE, DRY

4.0'-4.6' SAA, TRACE FINE GRANUL, WET

6.0'-6.4' ORANGE BROWN SILT FINE GRANUL, LITTLE C SAND, TRACE FINE
GRANUL, LOOSE, SATURATED8.0'-8.7' SAA, GRADING TO ORANGE BROWN FINE GRANUL, TRACE FINE
TRACE SILT, LOOSE, SATURATED10.0'-11.1' ORANGE BROWN FINE GRANUL, TRACE FINE GRANUL, TRACE SILT,
LOOSE, SATURATED12.0'-12.7' GRAY BROWN FINE GRANUL, TRACE FINE GRANUL, TRACE SILT, LOOSE,
SATURATED14.0'-14.8' GRAY BROWN FINE GRANUL, TRACE FINE GRANUL, TRACE SILT,
LOOSE, SATURATED14.8'-15.2' DARK GRAY FINE GRANUL, LITTLE FINE GRANUL, TRACE SILT,
LOOSE, SATURATED

* WANT TO DOUBLE CASE 0-3/4'

11/12/08

MW-08 Pilot Borehole

RJK

ARCADIS

RWD KUMD

MATECO

GARJ SWIFT, JOHN OLSON

COM

STEVE BOON

WESTON

EIMER VAN WAGNER

EQUIPMENTCME SS LC TRACK MOUNTED Rig, 4 1/4" ID HSA, 2" x 2"
SPURTSPODS, 140 LB AUTOHAMMER, 30" FALL.

TIME	INT (hr)	PER (hr)	Blows (6")	N	Comments
1325	0-2	0.7'	5-6-4-3	10	
1336	2-4	0.3'	2-2-2-2	4	
1341	4-6	0.9'	2-2-3-3	5	16'
1343	6-8	0.4'	2-2-2-2	4	
1348	8-10	0.9'	1-1-4-6	5	
1351	10-12	0.9'	14-10-3-3	13	
1357	12-14	1.0'	1-4-5-7	9	
1402	14-16	0.6'	2-4-7-9	11	
1411	16-18	0.9'	4-6-11-9	17	
1414	18-20	0.9'	4-5-5-5	10	
1419	20-22	0.8'	2-2-4-7	6	
1427	22-24	0.3'	2-2-3-4	5	

* LOCATED ~ 10' N of STAKED LOCATION (STAKES LOCATED BY 4N BURN)

- END of Borehole @ 24' BGS, Borehole TERMINATE BROUGHT TO GROUND ~ 30' (N)
TYPE I PORTLAND 5% BENTONITE GROUT.

11/12/08

MW-08 Pilot Borehole

RJK

INTERVALDESCRIPTION

0-0.7'	ORANGE BROWN from GROUND, Some F SAND/SILT, TRACE MTC SAND, TRACE CLAY, AERIAL SAND (ACCESS ROAD MATERIAL)
2.0'-2.3'	SAA
4.0'-4.1'	DARK GRAY SILT/CLAY, TRACE ORGANICS (ROOTS), SAND
4.1'-4.9'	ORANGE BROWN F SAND, TRACE MTC SAND, TRACE GROUND, TRACE SILT, MTC.
6.0'-6.4'	ORANGE BROWN SILT FOC SAND, LITTLE from GROUND, LOOSE, SATURATED
8.0'-8.4'	SAA
8.4'-8.75'	GRAY BROWN F SAND, TRACE MTC SAND, TRACE SILT, SATURATED
8.75'-8.9'	GRAY SILT from GROUND (NITRIC ACID MEASUREMENT +)
10.0'-10.3'	GRAY BROWN FOC SAND, LITTLE from GROUND, TRACE SILT, SATURATED
10.3'-10.9'	GRAY BROWN F SAND, TRACE SILT, SATURATED
12.0'-13.0'	SAA GRADING TO DARK GRAY BROWN from SAND, LITTLE C SAND, TRACE from GROUND, TRACE SILT, SATURATED, GRADATIONAL CHANGE ~ 12.5' BGS
14.0'-14.4'	GRAY BROWN from SAND TRACE C SAND, TRACE from GROUND, TRACE SILT, SATURATED
14.4'-14.6'	DARK GRAY from GROUND, LITTLE FOC SAND, TRACE SILT, LOOSE, SATURATED
16.0'-16.9'	DARK GRAY FOC SAND, LITTLE from GROUND, TRACE SILT, LOOSE, SATURATED
18.0'-18.9'	DARK GRAY FOC SAND AND from GROUND, TRACE SILT, LOOSE, SATURATED
20.0'-20.8'	SAA
22.0'-22.3'	SAA

11/12/08 MW-06 Pilot BOR-36

(25)

ARCADIS RWD KIMO

MATECO GARY SWIFT, JOHN O/SO

COM STEVE BOOM DETR FAX B.

WESTON EIMER VAN LAMBER

EQUIPMENT CMESS LC TRACK MOUNTED RIG, 4 1/4" ID HSA, 2"x2" SPLITSPRINGS, 140 LB ANVILHAMMER, 30" LMI.

TIME	INT (hr)	ACC (hr)	BIDS (6")	N	COMMENTS
1600	0-2	1-2-2-2	1-2-2-2	4	
1607	2-4	2-0'	2-2-2-2	4	
1608	4-6	0-8'	4-5-7-5	12	
1612	6-8	1-2'	9-1-1-1	2	± 8'
1615	8-10	1-2'	1-1-1-2	2	
1618	10-12	1-6'	4-4-6-10	10	
1625	12-14	1-2'	6-6-9-10	15	
1630	14-16	2-0'	6-7-9-10	16	
1634	16-18	1-3'	1-2-2-2	4	
1638	18-20	0-7'	1-2-2-2	4	
1641	20-22	0-9'	2-2-4-5	6	
1644	22-24	1-3'	3-3-4-6	7	

- END of BOR-36 C 24' ABS, BOR-36 TRAILING GLEND TO GARDEN ~ 30 GAL TYPE F PORTLAND / 5% BENTONITE GRAT.

* 4.5'-24' HIGH K SANDS / SANDS / GRAVEL

11/12/08

MW-06 Pilot BOR-36

(25)

INTERVAL

DESCRIPTION

0-2.0' Gray Silty Clay, thin ORGANICS, SANDS #

2.0'-4.0' SAA, GROUND TO OLIVE BROWN IN COLOR P ~ 3.3' #

4.0'-4.5' OLIVE BROWN Silty Clay, thin ORGANICS, moist

4.5'-4.8' ORANGE BROWN SAND, thin M GRAVEL, thin SILT, wet

6.0'-7.2' ORANGE BROWN FINE SAND, thin SILT, SATURATED

8.0'-9.2' SAA

10.0'-11.6' SAA

12.0'-13.2' SAA

14.0'-15.9' SAA

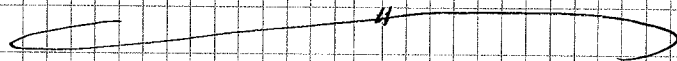
15.9'-16.0' GRAY BROWN FINE SAND AND FINE GRAVEL, LOOSE, SATURATED

16.0'-17.3' GRAY BROWN FINE SAND AND FINE GRAVEL, LOOSE, SATURATED

18.0'-18.7' SAA

20.0'-20.9' GRAY BROWN FINE SAND, LITTLE FINE GRAVEL, LOOSE, SATURATED.

22.0'-23.3' SAA



11/8/08

MW-02 PWT BORING

(25)

ARCADIS

ROO KUNO

MATECO

GARY SWIFT, JOHN OLSO

COM

STEVE BROWN

WESSTO

EIMER VAN WAGENEL EPA MILO

EQUIPMENTCAMESS LC TRUCK MOUNTED RIG, 4 1/4" ED HSA, 2" X 2"
SPLITSPOONS, 1400S AUTOHAMMER, 30" FRII

TIME	INT (L)	REC (L)	BLOW (G)	N	COMMENTS
0956	0-2	2.0	1-1-1	2	
1002	2-4	1.7'	2-1-1-2	2	3'
1004	4-6	1.0'	5-9-13-12	22	
1018	6-8	0.7'	5-9-11-17	20	
1021	8-10	0.4'	10-4-2-2	6	
1025	10-12	0.2'	3-3-5-5	8	
1031	12-14	0.4'	12-12-8-7	20	
1035	14-16	1.5'	7-7-7-12	14	
1047	16-18	1.0'	7-10-12-16	22	
1051	18-20	0.8'	7-8-10-10	18	

- END OF BORING @ 20' BGS, BORING TRAILER GROUNDED TO GRADE

w/ ~ 25 GAIS BUREAUITE QUICKCUT.

* NO PLATFORM CONSTRUCTED YET. USE STAKE ELEVATION; CHECK AND
ELEVATION AFTER PLATFORM IS BUILT FOR POTENTIAL SCREEN PLACEMENT.

* 4-2'-20' HIGH K SANDS/GRAVELS

11/12/08

MW-02 PWT BORING

(25)

INTERVALDESCRIPTION0-2.0' DARK GRAY BROWN SILTY CLAY, TRACE INTERMITTENT F SAND
CARBONATES, TRACE DEPOSITS, MOIST. & DOUBLE CASE

2.0'-2.9' SAA & DOUBLE CASE

2.9'-3.3' OLIVE BROWN F SAND, TRACE SILT, SATURATED

3.3'-3.7' LIGHT GRAY BROWN F SAND, TRACE SILT, TRACE SILTS, SATURATED
NITRIC +

4.0'-4.2' SAA

4.2'-5.0' LIGHT GRAY BROWN F SAND, LITTLE C SAND, LITTLE FROM
GRAVEL, TRACE SILT, LOOSE, SATURATED, NITRIC +

6.0'-6.2' SAA

8.0'-8.4' DARK GRAY FROM GRAVEL, LITTLE FOC SAND, TRACE SILT, SATURATED

10.0'-10.2' SAA

12.0'-12.4' GRAY BROWN FOC SAND, LITTLE FROM GRAVEL, TRACE SILT, SATURATED

14.0'-14.6' SAA

14.6'-15.5' LIGHT GRAY BROWN FROM SAND, TRACE C SAND, TRACE FROM GRAVEL,
TRACE SILT, SATURATED.16.0'-17.0' SAA GRADING TO LIGHT GRAY BROWN FROM SAND, TRACE
SILT, SATURATED. GRADING @ ~ 16.5' BGS18.0'-18.8' LIGHT GRAY BROWN FROM SAND, TRACE F GRAVEL,
TRACE SILT, SATURATED.

11/13/08 MW-01 Pilot Borehole (PZ-01) (200)

ARCADIS Ron Kuhn

MATECO Gary Swift, John Olson

CDM Steve Boon

WISCONSIN EIMER VAN WAGNER

EQUIPMENT ONE SSLC TRACK MOUNTED Rig, 4 1/4" ID HSA, 2" x 2"
SPLITS, PORES, 140 LB AUTOMANUAL, 30" / 141

TIME	INT (ft)	ACC (ft)	BLOBS (6")	N	COMMENTS
1310	0-2	1-2'	4-4-3-2	7	
1316	2-4	1-0'	2-2-2-3	4	
1319	4-6	0-0'	2-2-2-2	4	NO RECOVERY 2" SPLITS, 12" / 3"
1331	6-8	1-2'	W011-2-3-5	5	
1335	8-10	0-8'	3-5-8-10	13	
1338	10-12	0-4'	5-8-12-9	20	
1344	12-14	0-7'	10-8-5-5	13	
1348	14-16	0-3'	5-5-8-8	13	
1353	16-18	0-3'	2-5-2-5	7	
1358	18-20	0-6'	2-3-5-5	8	
1400	20-22	NR	5-7-8-11	15	
1407	22-24	0-5'	7-7-7-7	14	

- 2" ID SCH 40 PVC 0-010" SIOR SCREEN 3-13' BGS

- 2" ID SCH 40 PVC RISER ~3' AGS - 3' BGS

- GEAR #5 "610BAI FILTER PACK" Silt and sand 2'-13' BGS (7 BAGS)

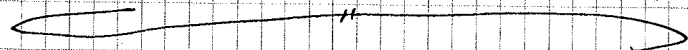
- 3/8" Bentonite Hole Plug 0-2' BGS (1 BAG)

11/13/08 MW-01 Pilot Borehole (PZ-01) (200)

INTERVAL

DESCRIPTION

0-0.4'	GRAY BROWN Silty F SAND, TRACE FOC SAND, TRACE F GUAEL (RANGE)
0.4'-0.6'	DARK BROWN Silty F SAND, TRACE FOC SAND, TRACE FROM GUAEL, dry.
0.6'-1.2'	GRAY BROWN Silty CLAY, TRACE ORGANICS, DRY & DOUBLE CASE
2.0'-3.0'	SAA & DOUBLE CASE
4.0'-6.0'	NO RECOVERY 2" / 13" SPLITS
6.0'-6.9'	DARK BROWN ORG. CLAY Silty, LITTLE F SAND, MOIST
6.9'-7.2'	GRAY BROWN F SAND, TRACE SILT, LOOSE, SATURATED
8.0'-8.5'	SAA
8.5'-8.8'	OLIVE BROWN FROM GUAEL, LITTLE F SAND, TRACE AUTOCSSA, TRACE SILT, SATURATED. NITRIC +
10.0'-10.4'	GRAY BROWN FROM GUAEL, TRACE FOC SAND, SATURATED
12.0'-12.7'	DARK GRAY FOC SAND AND FROM GUAEL, SATURATED.
14.0'-14.3'	SAA
16.0'-16.3'	DARK GRAY FROM GUAEL, TRACE FOC SAND, SATURATED
18.0'-18.6'	SAA
20.0'-22.0'	NO RECOVERY
22.0'-22.5'	GRAY BROWN FROM GUAEL, LITTLE FOC SAND, TRACE SILT, LOOSE, SATURATED



11/13/08 MW-04 Pilot Borings (20)

ARCADIS RAY KUHN

MATECO GARY SWIFT, JOHN OLSON

GDM STEVE BOOM

WESTCO ELMER VAN WAGDER

EQUIPMENT CMR 55 LC TRUCK MOUNTED RIG, 4 1/4" ID HSA, 2" x 2" SPLITSPICES, 140 LB AIRHAMMER, 30" LGA1

TIME	INT (LT)	ACC (LT)	BLOWS (6")	N	Comments
1600	0-6'	-	CNT JAWS HSA THROUGH 22A STONE AND		
1603	6-8'	1.5'	404-404-1-1	1	7'
1608	8-10'	0.6'	2-2-3-3	5	
1614	10-12'	0.5'	1-1-1-13	2	Plows 8247 8248
1620	12-14'	0.9'	4-4-4-6	8	
1622	14-16'	0.7'	4-4-10-6	14	
1628	16-18'	0.6'	6-6-8-11	14	
1635	18-20'	0.5'	15-9-7-12	16	
1644	20-22'	0.3	5-5-8-12	13	

- END of BORING @ 22' BGS, BORING TRUMMIE GRABS TO GROUND

- 30 GRABBS BENEATH GRACEGROUT.

* 8'-22' THICK K SANDS/GRAVELS

11/13/08 MW-04 Pilot Borings (20)

INTERVAL DESCRIPTION

0-6' 22A STONE AND

6.0'-7.5' DARK GRAY GRADING TO DARK GRAY BROWN F SAND, TRACE SILT, LOOSE, WET.

8.0'-8.6' LIGHT GRAY BROWN FINE SAND, LITTLE C SAND, LITTLE FINE GRAVEL, TRACE SILT, LITTLE CALCAREOUS SILT / SAND SIZE GRAINS MITRIC + SATURATED.

10.0'-10.5' LIGHT GRAY CALCAREOUS FINE SAND, LITTLE FINE GRAVEL, TRACE C SAND, TRACE SILT (CALCAREOUS), SATURATED MITRIC +

12.0'-12.2' SAA

12.2'-12.9' BROWN FINE GRAVEL, TRACE FINE C SAND, TRACE SILT, SATURATED.

14.0'-14.3' ORANGE BROWN SILTY CLAY, MODERATELY STICKY, MOIST.

14.3'-14.7' ORANGE BROWN FINE C SAND AND FINE GRAVEL, TRACE SILT, SATURATED

16.0'-16.4' SAA

16.4'-16.6' DARK GRAY F SAND, TRACE SILT, SATURATED

18.0'-18.5' ORANGE BROWN FINE C SAND AND FINE GRAVEL, TRACE SILT, SATURATED.

20.0'-20.3' SAA

11

11/13/08 Daily Log (22)

WEATHER OVERCAST, LIGHT PERIODIC SNOW, 40°^s

0630 RDK ON SITE, PREPARE FOR CONTINUATION OF PILOT BORINGS.

0730 Safety Meeting

0800-0900 MATEO TAKES UP w/ H2O @ P.W. (500 GAL)

0920 MATEO CHECKING AUTO HAMMER ON RIG

1100-1200 TRUCK GOES MW-02 PILOT BORING, HIGH PRESSURE STEAM
CLEAN AUGER/TOOLING, MOBILIZE TO MW-01.

1200-1300 MATEO LUNCH

1530 PZ-01 INSTALLATION COMPLETE

1715 MW-4 PILOT BORING GROUNDED.

1730 MATEO OFF SITE

1830 RDK OFF SITE

- SCW/EMMIE NOTES

(13)

11/14/08 Daily Log (22)

WEATHER OVERCAST, RAIN, 50°^s

0630 RDK ON SITE @ PLANNING OFFICE. PREPARE FOR TODAY'S PILOT BORING ACTIVITIES.

0730 Safety Meeting

0800 ON SITE NORTH SIDE, PREPARE TO START @ MW-05 PILOT BORING

0800-0900 RIG MAINTENANCE (FIXES AUTO HAMMER; WASH)

1110 PZ-05 INSTALLATION COMPLETE

1130 MOVED TO MW-03 PILOT BORING

1415 STEVE ROOM OFF SITE

1730 MW-03 PILOT BORING TRUCKING GROUNDED

1930-1530 RIG/BORING SCISSOR STEEL BECOMES @ 4N

1530 MATEO MOVES RIG/COMPACT TO STAGING AREA

1530-1600 Paperwork / MATEO

11/14/08 MW-05 Plot Bore 36 (P2-05) (20)

ARLADIS RAO KUNO

MATECO GARY SUIT, JONAS O/SO

CDM STEVE BOOM

EQUIPMENT CASE SS LC TRUCK MOUNTED RIG, 4 1/4" CO HSA, 2"x2"
SPLIT SPOONS, 140 LB AUTOMAT, 30" FALL, 3" SPOONS

TIME	INT (ft)	ACC (ft)	BLINDS (6")	N	COMMENTS
0920	0-4'	-	CONTINUOUS HSA THROUGH 22A STONE AND		
0926	4-6	1.0'	3-1-1-1	2	NO RECOVERY 2"
0932	6-8	1.1'	3-1-1-1	2 & 7'	TRIED 3"
0940	8-10	0.4'	7-9-10-10	19	NO RECOVERY 2"
0949	10-12	1.1'	4-6-9-13	15	TRIED 3"
0957	12-14	1.4'	23-15-10-8	25	3" PHOTO 8249
1001	14-16	0.4'	7-10-10-10	20	3"
1009	16-18	0.8'	5-7-8-8	15	3"
1016	18-20	0.6	6-7-6-6	13	3"
1020	20-22	0.0	6-9-9-9	18	3"

- 2" ID SCH 40 PVC 0.010" SPT SPACED 4'-14' BGS
- 2" ID SCH 40 PVC RIGID - 3' AGS - 4' BGS
- GRADE #5 "610BA1 FUTURE PACK" SILICA SAND PACK 2.0' - 14.0' BGS (7 BAGS)
- 3/8" AUTOMATIC HOLDING 0-2' BGS (1 BAG)

11/14/08 MW-05 Plot Bore 36 (P2-05) (20)

INTERVAL DESC, PHOTO

0-4' 22A STONE AND

4.0'-4.6' GRAY/BROWN SILT/CLAY, TRACE HIGH/DEBRIS OR BGS, CHYD * DOUBLE CASE

4.6'-4.85' GRAY/BROWN FINE SAND, TRACE SILT, TRACE SHELLS, MOIST

4.85'-5.0' DARK GRAY SILT CLAY, MOIST * DOUBLE CASE

6.0'-6.3' DARK GRAY F SAND, TRACE SILT, SATURATED

6.3'-7.1' OLIVE BROWN GRADING TO LIGHT GRAY F SAND, TRACE SILT, TRACE SHELLS, SATURATED. (LIGHT GRAY CALCAREOUS, W/ TRIL.)

8.0'-8.4' LIGHT GRAY FINE SAND, LITTLE C SAND, TRACE FINE GRAVEL, TRACE SILT, SATURATED (LIGHT GRAY CALCAREOUS, W/ TRIL.)

10.0'-11.1' SAND, NO SHELLS TRACE C GRAVEL

12.0'-12.6' GRAY/BROWN FINE SAND, TRACE C SAND, TRACE SILT, SATURATED

12.6'-12.9' GRAY/BROWN FINE SAND AND FINE GRAVEL, TRACE SILT, SATURATED

12.9'-13.4' DARK GRAY FINE GRAVEL, LITTLE FINE SAND, SATURATED

14.0'-14.4' DARK GRAY C SAND AND FINE GRAVEL, LITTLE FINE SAND, SATURATED

16.0'-16.8' DARK GRAY FINE SAND, LITTLE FINE GRAVEL, SATURATED

18.0'-18.6' DARK GRAY C SAND AND FINE GRAVEL, LITTLE FINE SAND, TRACE IN GRAVEL, SATURATED

20.0'-22.0' NO RECOVERY, LITTLE SAA

x

11/14/08 MW-03 Pilot Borehole (DOK)
ARCADIS RAO KUND
MATELO GARY SWIFT, JOHN OLSO
CSM STEVE BOOM
EQUIPMENT CME SSLC TRACK MOUNTED RIG, 4 1/4" ID HSA, 2" x 2"
 SPLIT SPOONS, 140 LB AUTOMANUAL, 30" FALL, 3" SANDS

TIME	INT (L)	REC (L)	BLOWS (6")	N	COMMENTS
1130	0-3	-	CONTINUOUS 4 1/4" ID HSA THROUGH ZEA STONE		
1307	3-5	0.9'	2-2-2-2	4	3"
1314	5-7	1.6'	2-2-2-2	4	3"
1317	7-9	1.3'	2-4-7-9	11 @ 8'	3"
1325	9-11	0.6'	4-7-11-12	18	3"
1328	11-13	1.2'	6-6-6-8	12	3"
1336	13-15	1.1'	4-5-5-7	10	3"
1341	15-17	1.0'	6-9-12-20	21	3"
1348	17-19	1.3'	4-5-8-8	13	3"
1353	19-21	1.2'	6-9-11-13	20	3"
1402	21-23	1.3'	10-11-14-20	25	3"

- END OF BOR 26 @ 23' BGS. BOR 26 TRIMMED GRAVEL
 TO GRADE W/ ~ 30 GRI BENTONITE GRAUT.

A 9'-23' HIGH K SANDS/GRAVEL

11/14/08 MW-03 Pilot Borehole (DOK)

INTERVAL

DESCR. INTERVAL

0-3	ZEA STONE
3.0'-3.4'	ZEA STONE
3.4'-3.5'	DARK BROWN TOPSOIL
3.5'-3.9'	GRAY BROWN SILTY CLAY, TRACE ORBICLES, MOIST & LOOSE CASE
5.0'-5.4'	DARK BROWN F SAND, TRACE SILT, SATURATED
5.4'-6.6'	ORANGE BROWN F SAND, TRACE SILT, SATURATED
7.0'-8.0'	SAA
8.0'-8.3'	ORANGE BROWN F SAND, LITTLE SILT, TRACE MIOC SAND, TRACE LIGN GRAVEL, SATURATED
9.0'-9.6'	ORANGE BROWN SILTY F SAND, LITTLE MIOC SAND, TRACE FIOC GRAVEL, SATURATED
11.0'-11.3'	ORANGE BROWN F SAND, LITTLE MIOC SAND, TRACE LIGN GRAVEL, SATURATED TRACE SILT
11.3'-12.2'	GRAY BROWN FIOC SAND, TRACE LIGN GRAVEL, LOOSE, SATURATED
13.0'-14.1'	SAA
15.0'-16.0'	GRAY BROWN FIOC SAND, LITTLE C SAND, TRACE FIOC GRAVEL, SATURATED
17.0'-17.4'	SAA
17.4'-18.3'	GRAY BROWN FIOC SAND, LITTLE LIGN GRAVEL, LOOSE, SATURATED
19.0'-19.5'	SAA
19.5'-20.2'	LIGHT GRAY BROWN F SAND, TRACE SILT, SATURATED
21.0'-21.2'	SAA
21.2'-21.8'	GRAY BROWN FIOC SAND, LITTLE C SAND, SATURATED
21.8'-22.3'	GRAY BROWN C SAND AND FIOC GRAVEL, LITTLE FIOC SAND, SATURATED

11/17/08

MW-09 Plot Bore 26

(22)

ARCAS

RWD KUNA

MATECO

GAR/ SWIT, ROB MEELWETED

EQUIPMENT

ONE SS LC TRACK MOUNTED RIG, 4 1/4" ID HSA, 2"x2" SPLITSPODS, 140 LB AUTOHAMMER, 30" PA 11

TIME	INT (ft)	ACC (ft)	BLOW (G)	N	COMMENTS
0855	0-2	0.6'	2-2-2-3	4	
0859	2-4	1.0'	2-2-2-2	4	
0902	4-6	0.6'	2-3-3-4	6	
0907	6-8	1.2'	6-6-11-18	17	
0911	8-16	1.2'	10-20-12-9	32	
0916	10-12	1.3'	5-3-3-5	6	12'
0921	12-14	1.0'	4-5-7-12	12	
0926	14-16	1.3'	16-12-7-5	19	
0932	16-18	0.7'	13-12-7-7	19	
0936	18-20	1.7'	6-6-3-3	9	
0939	20-22	1.7'	2-3-6-7	9	
0944	22-24	1.7'	4-4-4-7	8	
0949	24-26	1.2'	2-2-2-4	4	

- END of Boring @ 26' BGS. BORING TRAILING GROUND TO END OF -
30 GGS BENTONITE QUICK GREY.

* 11-26' HIGH K SANDS/GRAVEL.

11/17/08

MW-09 Plot Bore 26

(23)

INTERVALDESCR. DATA

0-0.6' BROWN SAND/ORGANIC SILT, TRACE ORGNICS (ROOTS, WOODS),
TRACE ROOT in TIP of SAMPLE, AMP.

2.0'-3.0' DARK ORANGE BROWN F SAND, TRACE MTC SAND, TRACE F GROUND,
TRACE SILT, AMP.

4.0'-4.6' SAA

6.0'-6.5' SAA

6.5'-7.2' GRAY BROWN FINE SAND, LITTLE C SAND, LITTLE FINE GRAVEL,
TRACE SILT, AMP.

8.0'-9.2' SAA, MIDST/WATER BOTTOM of SAMPLE.

10.0'-11.0' ORANGE BROWN F SAND, TRACE SILT, SATURATED.

11.0'-11.3' ORANGE BROWN FINE SAND, TRACE C SAND, TRACE FINE GRAVEL, TRACE
SILT, SATURATED.

12.0'-13.0' ORANGE BROWN FOC SAND, LITTLE FINE GRAVEL, TRACE SILT, SATURATED.

14.0'-15.3' GRAY BROWN FINE SAND, LITTLE C SAND, TRACE FINE GRAVEL, TRACE SILT,
SATURATED.

16.0'-16.3' SAA

16.3'-16.7' GRAY BROWN C SAND AND FINE GRAVEL, TRACE FINE SAND, SATURATED.

18.0'-19.7' GRAY BROWN FINE SAND, LITTLE C SAND, TRACE FINE GRAVEL,
LOOSE, SATURATED.

20.0'-21.7' SAA

22.0'-23.7' SAA

24.0'-25.2' SAA

3/2/09 Drilling Log (2)

WEATHER Sunny, 10° F warming to Low 20°

0630 ROK @ K-200 Field office, picking up supplies for PLANURII TORA monitoring well installations.

0730-0850 Field Recon of well installation locations - All locations still staked, need to build up areas MW-12, MW-2, MW-3

0900 MATECO on site, revised well installation details. MATECO sets up staging area on South side of K-200 ridge

0915 ROK speaks w/ Steve Broom (MDEQ) oversees & discusses SCHWAB, Steve still 2 more days.

0930 ROK speaks w/ Dave Condit re getting started

0930-1030 MATECO unloads / stages in "staging" area, sets up MW-15

1030-1130 Spins 12 1/4" ID HSA to 3' BGS @ MW-15, BGS w/ 4 1/4" HSA w/ 12 1/4" ADJER AND IT BECOMES EVIDENT THAT THE MUDRA WILL NOT WORK DUE TO SOIL CUTTING IN 12 1/4" ID HSA ~ 2.5' AFS. CALL MATECO! DISCUSS STOPPING CASING FIRST, COMING BACK; DRILLING THROUGH CASING VIA CONVENTIONAL METHODS. MATECO'S COMMENTS ARE SPENDING/LOOKING UP 10" CASING DUE TO STANDARD INSTALLATION PLANS. NEED TO TRY TO SEE IF CONVENTIONAL APPROACH WILL WORK.

1230 Steve Broom (MDEQ) oversees on site

1245 ROK speaks w/ Dave Condit (After conference call w/ VSEP, MDEQ). Dave to formalize comments; send out new well installation package tomorrow.

1500 10" STEEL CASING GROUTED 0-5' BGS @ MW-15

3/2/09; 3/12/09 MW-15 (2)

ARCADIS ROAD KUNIA

MATECO: GARY SWART, JACIE SANDERS

COM: STEVE BROOM

EQUIPMENT: CMR SS LC TRUCK MOUNTED RIG, 12 1/4" ID HSA, 4 1/4" ID HSA, 12 1/4" ID HSA "PING" CAT 267 B SKID STEER

- 10" STEEL CASING GROUTED 0-5' BGS w/ ~ 30 BAGS TYPE I / PORTLAND / 5% BENTONITE GROUT.

3/12/09 MW-15 WELL CONSTRUCTION DETAILS

- 2" ID SCH. 40 TYPE 304 SS VEE WIRE WRAP G-DE 0.010" SCHEDULE 6.5-11.5' BGS
- 2" ID SCH. 40 TYPE 304 SS RISER 3.0' AFS - 6.5' BGS
- GARDEN H1 K-E SILICA SANDPACK 6.0' - 11.5' BGS (2.75 BAGS)
- 10" STEEL CASING GROUTED 0-5.0' BGS
- 3/8" BENTONITE CHIP SEAL 4.0' - 6.0' BGS
- TYPE I PORTLAND / 5% BENTONITE GROUT 0-4.0' BGS
- STEEL PROTECTIVE CASING 3.2' AFS - 1.8' BGS

3/2/09 : 3/17/09

MW-13

(22)

ARCADIS RUD KUND

MATECO GARY SWARTZ JACK SMITH

CON: STEVE BOOM

EQUIPMENT: CASE SS LC TRACK MOUNTED RIG, 12 1/4" ID HSA, 4 1/4" ID HSA, 12 1/4" ID HSA PNB, CAT 247B SKID STEER

- 10" STEEL CASING GROUTED 0-6' BAGS w/ ~35 BAGS TYPE I PORTLAND/5% BENTONITE GROUT.

3/17/09

MW-13 WELL CONSTRUCTION DETAILS

- 2" ID SCH. 40 TYPE 304 SS VIBRATORY WIRE 0-0.10" SCREEN 7.0'-12.0' BAGS

- 2" ID SCH. 40 TYPE 304 SS RISER 3.0' BAGS - 7.0' BAGS

- GMAE #1 K&E SILICA SAND PACK 6.5'-12.0' BAGS (3.25 BAGS)

- 10" STEEL CASING GROUTED 0-6.0' BAGS

- 3/8" BENTONITE CHIP SEAL 4.5'-6.5' BAGS

- TYPE I PORTLAND/5% BENTONITE GROUT 0-4.5' BAGS

- STEEL PROTECTIVE CASING 3.2' BAGS - 1.8' BAGS

3/2/09

Daily Log CONT.

(23)

1500 RSE DISCUSSES 10" CASING INSTALLATION DEPTH C MW-13 w/ DOK COND. STICK w/ ORIGINAL 6' CASING DEPTH AS ORIGINALLY PROPOSED.

1500-1530 MATECO HIGH PRESSURE STEAM CURE AXLES/TOOL JOBS, MODIFIED TO MW-13 LOCATION.

1630 MW-13 10" STEEL CASING INSTALLATION COMPLETE

1630 STEVE BOOM (MOOR CURSIVE) OFF SITE.

1630-1730 MATECO HIGH PRESSURE STEAM CURE AXLES/TOOL JOBS, WINDING EQUIPMENT, SITE CLEANUP.

1730 OFF SITE

3/3/09 Daily Log (25)

WEATHER Sunny, -5°F warming to 30°F

0630 RMC ON SITE, PREPARE FOR TODAY'S 10" STEEL CASING INSTALLATIONS.

0715 MATECO/STEVE BOOM ON SITE, MATECO STARTING/ WARMING EQUIPMENT.

0730 TRAILGATE SAVING/ARRIVING

0800 MATECO MOVES/SETS UP E M/W-10

0850 M/W-10 CASING DRILLING: SET 2' AGS, MATECO HANDS SITE TO GET H2O P.C. BY GPH.

0938 MATECO BACK FROM GETTING H2O

1015 M/W-10 10" CASING INSTALLATION COMPLETE.

1015-1050 DRILL 12 1/4" AUGERS/TOOLING, MOBILE TO M/W-11

1200 M/W-11 10" CASING INSTALLATION COMPLETE

1200-1300 MATECO LUNCH

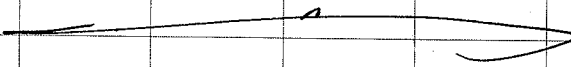
1300 MATECO SUPPORT TRUCK ON SITE w/ SUPPLIES (GUM MIX, SAND, PORTLAND, 5' SS JOINTED V WARP SEAMS.

1330 MATECO MOVES TO M/W-14

1445 M/W-14 10" CASING INSTALLATION COMPLETE

1445-1730 STREAM CRAW AUGERS/TOOLING, LOAD UP: MOBILE TO NORTH SIDE OF KALAMAZOO RIVER

1730 OFF SITE



3/3/09 3/17/09 M/W-10 (25)

ARCADIS ROAD KUMU

MATECO: GARY SWIFT, JACK SANABES

CDM: STEVE BOOM

EQUIPMENT: CME SS LC TRACK MOUNTED RIG, 12 1/4" ID HSA, 4 1/4" ID HSA, 12 1/4" ID HSA PIVG, CAT 247B SKID STEER.

- 10" STEEL CASING GROoved 0-4' w/ ~30 GALVANS TYPE I PORTLAND/5% BENTONITE GROUT.

3/17/09 M/W-10 WELL CONSTRUCTION DETAILS

- 2" ID SCH. 40 TYPE 304 SS VIB WIRE WRAP 0.010" SLOPED 4.5-9.5' BGS

- 2" ID SCH. 40 TYPE 304 SS RISER 3.0' AGS - 4.5' BGS

- 6" DIA. 1 KIE SILICA SANDPACK 4.0-9.5' BGS (3 BGS)

- 10" STEEL CASING GROoved 0-4.0' BGS

- 3/8" BENTONITE CHIP SEAL 2.0-4.0' BGS

- TYPE I PORTLAND/5% BENTONITE GROUT 0-2.0' BGS

- STEEL PROTECTIVE CASING 3.2' AGS - 1.8' BGS

3/3/09 : 3/17/09

MW-11

(201)

ARCADIS Ron Kuhn

MATCO: Gary Smith, Jack Sanders

COM: Steve Broom

EQUIPMENT: CME SS LC TRUCK MOUNTED RIG, 12 1/4" ID HSA w/ ANG,
4 1/4" ID HSA, CAT 267B SKIN STEER.

- 10" STEEL CASING GROUTED 0-4' w/ ~ 35 GALLONS TYPE I PORTLAND/
5% BENTONITE GROUT

3/17/09

MW-11 WELL CONSTRUCTION DETAILS

- 2" ID SCH 40 TYPE 304 SS VEE WIRE W/ 0.010" SCREEN 5.0-10.0' BGS
- 2" ID SCH 40 TYPE 304 SS RISER 3.0' AFS - 5.0' BGS
- GRADE #1 K:F SILICA SANDPACK 4.5'-10.0' BGS (2 BAGS)
- 10" STEEL CASING GROUTED 0-4' BGS
- 3/8" BENTONITE CHIP SEAL 2.5-4.5' BGS
- TYPE I PORTLAND/5% BENTONITE GROUT 0-2.5' BGS
- STEEL PROTECTIVE CASING 3.2' AFS - 1.8' BGS

3/3/09 : 3/16/09

MW-14

(201)

ARCADIS Ron Kuhn

MATCO: Gary Smith, Jack Sanders

COM: Steve Broom

EQUIPMENT: CME SS LC TRUCK MOUNTED RIG, 12 1/4" ID HSA w/ CENTER
PIVOT, 4 1/4" ID HSA, CAT 267B SKIN STEER

- 10" STEEL CASING GROUTED 0-3' BGS w/ ~ 25 GALLONS TYPE I PORTLAND/
5% BENTONITE GROUT

3/16/09 MW-14 WELL CONSTRUCTION DETAILS

- 2" ID SCH 40 TYPE 304 SS VEE WIRE W/ 0.010" SCREEN 4.0-9.0' BGS
- 2" ID SCH 40 TYPE 304 SS RISER 3.0' AFS - 4.0' BGS
- GRADE #1 K:F SILICA SANDPACK 3.5'-9.0' BGS (2.5 BAGS)
- 10" STEEL CASING GROUTED 0-3.0' BGS
- 3/8" BENTONITE CHIP SEAL 2.0-3.5' BGS
- TYPE I PORTLAND/5% BENTONITE GROUT 0-2.0' BGS
- STEEL PROTECTIVE CASING 3.2' AFS - 1.8' BGS

3/4/09

Daily log

(25)

WEATHER

OVERCAST TO PARTLY SUNNY, 20°F WARMING TO 40'S

0700

PK @ FORMER PLUMMER IMPROVEMENT (WORTH)
FOR CONTINUATION OF MONITORING WELL/CASING
INSTALLATIONS. PREPARE PAPERWORK.

0815

MATECO SAYS UP TO PZ-05 FOR ABANDONMENT.

0830

ES S. ; TEAM OUTSIDE TO LOOK @ PZO LOCATIONS. TEAM
WILL CALL TO CURA. PAA CONTRACTOR. MATECO BUYING
SUPPLIES (CASING, 12 1/4" ID HSA, PORTLAND ETC. FROM
SOUTH SIDE STAGING AREA.

0935

MATECO BACK FROM GETTING SUPPLIES

1000

PZ-05 ABANDONMENT COMPLETE

1115

MW-5 10" CASING INSTALLATION COMPLETE.

1115-1315

MOBE TO MW-4, HIGH PRESSURE STREAM CLEAN ACCESS/
TOOLING, MATECO LUNCH, TANK UP W/ H₂O

1415

MW-4 10" CASING INSTALLATION COMPLETE.

1415-

HIGH PRESSURE STREAM CLEAN ACCESS/TOOLING, MOBILE TO MW-9

1800

MW-9 10" CASING INSTALLATION COMPLETE.

1800-1830

HIGH PRESSURE STREAM CLEAN ACCESS/TOOLING, WINTERIZE
RIG/EQUIPMENT.

1830

OFF SITE



3/4/09 : 3/11/09

MW-5

(26)

ARCADIS

RON KUHNS

MATECO

GARY SMITH, JACK SANDERS

COM:

STEVE BOOM

EQUIPMENT:

CUMMINS LC TRUCK MOUNTED RIG, 12 1/4" ID HSA, (CENTRE
PUMP, 4 1/4" ID HSA, CAT 262B SKID STEER

- 10" STEEL CASING GRADED 0-5' AGS W/ ~ 40 GALONS TYPE
PORTLAND/5% BENTONITE GROUT.

3/11/09

MW-05 WELL CONSTRUCTION DETAILS

- 2" ID SCH. 40 TYPE 304 SS VEE WIRE WRAP 0-0.10' SCHEN 6.5-11.5' AGS
- 2" ID SCH. 40 TYPE 304 SS RISER 3-0' AGS - 6.5' AGS
- GRADE #1 10" E SUEA SANDPAC 6-0' - 11.5' AGS (3 BAGS)
- 10" STEEL CASING 0-5.0' AGS
- 3/8" BENTONITE CHIP SEAL 4-0' - 6.0' AGS
- TYPE I PORTLAND/5% BENTONITE GROUT 0-4.0' AGS
- STEEL PROTECTIVE CASING - 3.2' AGS - 1.8' AGS

3/4/09

PZ-05 ABANDONED

(24)

ARCADIS ROW KUMD

MARECO: GARY SWIFT, JACK SANDERS

COM: STEVE BOON

EQUIPMENT: CME SS LC TRACK MOUNTED RIG, 4 1/4" ID HSA

PZ-05 CONSTRUCTED DEPTH: 14' BGS

Σ 10' (711) 7' BGS

- OVERDRILLED PZ-05 w/ 4 1/4" ID HSA TO 15' BGS, PULLED WELL MATERIALS (10' 0.010" SCH. 40 2" PVC SCAFFOLD: PVC RISER).
- THUMMIE GROUTED BOREHOLE w/ ~ 40 BAGS TYPE I PORTLAND / 5% BENTONITE GROUT.

3/4/09 : 3/11/08

MW-4

(24)

ARCADIS ROW KUMD

MARECO: GARY SWIFT, JACK SANDERS

COM: STEVE BOON

EQUIPMENT: CME SS LC TRACK MOUNTED RIG, 12 1/4" ID HSA w/ CENTER PIVOT, 4 1/4" ID HSA, CAT 267 B SKID STEER.

- 10" STEEL CASING GROUTED 0-5' BGS w/ ~ 40 BAGS TYPE I PORTLAND / 5% BENTONITE GROUT.

3/11/09

MW-04 WELL CONSTRUCTION DETAILS

- 2" ID SCH. 40 TYPE 304 SS VEE WIRELINE 0.010" SCREEN 6.5-11.5' BGS
- 2" ID SCH. 40 TYPE 304 SS RISER 3.0' BGS - 6.5' BGS
- 6" MOD. 11 KIG SILICA SANDPACK 6.0' - 11.5' BGS (3 BAGS)
- 10" STEEL CASING 0-5.0' BGS
- 3/8" BENTONITE CHIP SCAI 4.0' - 6.0' BGS
- TYPE I PORTLAND / 5% BENTONITE ^{GROUT} SCAI 0-4.0' BGS
- STEEL PROTECTIVE CASING 3.2' BGS - 1.8' BGS

3/4/09 : 3/11/09 MW-09 (RDX)

ARCADIS ROW KUMAR

MATECO GARY SWIFT, JACK SANDERS

COM STEVE ADAM

EQUIPMENT CASE SS LC TRUCK MOUNTED RIG, 12 1/4" ID HSA w/ CENTER PIV, 4 1/4" ID HSA CAT 247 B SKID STEER

- 10" STEEL CASING GRouted 0.8' AGS - 9.2' BGS w/ ~ 65 GAL/1025 TYPE I PORTLAND / 5% BENTONITE GROUT. Difficult Drilling @ ~ 7' DUE TO CORRE 2008. Drilling TO 7' BGS; ABOVE CASING TO 9.2' BGS w/ RIG AUTO HAMMER (Resulting in 0.8' STUCKUP)

3/11/09 MW-09 WELL CONSTRUCTION DETAILS

- 2" ID SCH. 40 SS 0.010" ^{WIRE} VEE WARP TYPE 304 SCREW 11.5' - 16.5' BGS
- 2" ID SCH. 40 SS RISER 3.0' AGS - 11.5' BGS
- GRADE H / K:E SILICA SANDPACK 11.0' - 16.5' BGS (2.5 BGS)
- 10" STEEL CASING 0 - 9.2' BGS
- 3/8" BENTONITE CHIP SEAL 8.0' - 11.0' BGS (3/4 BGS)
- TYPE I PORTLAND / 5% BENTONITE GROUT 0 - 8.0' BGS
- STEEL PROTECTIVE CASING ~ 3.2' AGS - 1.8' BGS

3/5/09

RAINY LAB

(RDX)

WEATHER OVERCAST, WIND, HIGH 30'S, LOW 40'S

0600 RAK & K-ZOO OFFICE CHECKING ON SUPPLIES FOR TORA POST REMEDIATION SAMPLING NEXT WEEK.

0700 RAK ON SITE IN PLAINWELL, PREPARE FOR CONTINUATION OF MW CASING INSTALLATIONS / PILE BORINGS.

0720 MATECO PICKING UP SUPPLIES IN "SOUTH SIDE"

0730 MATECO CUTS 10" CASING FLUSH TO GROUND SURFACE & MW-9

0730 - 0800 MATECO GATHERS SUPPLIES, MOVES TO MW-1 LOCATION. HAD TO CLEAR AREA OF TIMBERS: MISC. DEBRIS

1000 P2-01 ABANDONMENT COMPLETE

1200 TERRA ON SITE, BEG. WORKING ON PHS INSTALLATIONS

1130 - 1230 MATECO LUNCH

1200 RAK CONFERS MW-1 10" CASING TO BE SET @ 4.5' AGS w/ DOWS CONFIN.

1315 MW-1 PILE BORING COMPLETE

1430 MW-1 10" CASING INSTALLATION COMPLETE

1430 - 1500 HIGH PRESSURE STEAM CLEAN AGERS / TOOLING, MOVING TO MW-6.

1600 RAK CONFERS 10" CASING @ MW-6 0-7.4' AGS w/ DOWS CONFIN.

1600 - 1630 MATECO CUTS MW-6 CASING TO 7.4' ON SOUTH SIDE

1700 STEVE BOOM OFF SITE

1705 MW-6 PILE BORING GRouted.

1705 - HIGH PRESSURE STEAM CLEAN AGERS / TOOLING

3/5/09 : 3/11/09 MW-01 Pilot Boring (25)

ARCADIS RAN KUNZ

MATECO GAB/ SWIFT, JACK SANDERS

COM STEVE BOON

EQUIPMENT CMES LC TRACK MOUNTED RIG, 4 1/4" ID HSA,
2 x 3" SPL. SPOONS, 140 LB AUTO HAMMER, 30" / 11
12 1/4" ID HSA

TIME	INT (hr)	REC (hr)	BLOWS (6")	N	COMMENTS
1038	0-2	1-6'	3-3-2-4	5	
1044	2-4	1-6'	3-9-5-3	14	
1051	4-6	2-0'	2-3-3-10	6	± 4.3'
1101	6-8	1-0'	4-7-8-19	15	
1108	8-10	1-0'	4-11-16-16	27	
1118	10-12	0-4'	15-15-12-7	27	

MW-01 CASING INSTALLATION

- 10" STEEL CASING GRADED 0-4.5' w/ ~ 40 GALLONS TYPE I PORTLAND 5% BENTONITE GROUT.

3/11/09 MW-01 WELL CONSTRUCTION DETAILS

- 2" ID SCH 40 TYPE 304 SS WEE WIRE WRAP 0.010" SCREEN 5.0'-10.0' BGS
- 2" ID SCH 40 TYPE 304 SS RISER 3.0' AGS - 5.0' BGS
- GEAR #1 K/E S-LIA SHAPACK 4.5'-10.0' BGS (2.5' BAGS)
- 10" STEEL CASING 0-4.5' BGS
- 3/8" BENTONITE CHIP SEAL 2.5'-4.5' BGS
- TYPE I PORTLAND 5% BENTONITE GROUT 0-2.5' BGS
- STEEL PROTECTING CASING 3.2' AGS - 1.8' BGS

3/5/09 MW-01 Pilot Boring (25)

INTERVAL	DESCRIPTION
0-1.6'	DARK GRAY BROWN SILT/CLAY, TRACE DEBRIS (ROOTS), MOIST
2.0'-3.1'	SAA
3.1'-3.3'	DARK GRAY/BLACK SILT/CLAY, SOFT, SLIGHT ODD, MOIST
3.3'-3.6'	BROWN F SAND, LITTLE SILT, TRACE MIOC SAND, TRACE IRON GROUND, LOOSE, WET.
4.0'-4.2'	DARK GRAY BROWN SILT/CLAY, MODERATELY LOOSE, MOIST/WET
4.2'-4.5'	DARK GRAY/BLACK SILT/CLAY, MODERATELY SOFT, MOIST
4.5'-5.3'	CLAY BROWN SILT/CLAY, TRACE CLAY, MODERATELY LOOSE, MOIST.
5.3'-6.0'	CLAY BROWN F SAND, TRACE SILT, TRACE MIOC SAND, WET.
6.0'-6.5'	LIGHT GRAY BROWN F SAND, TRACE SILT, LOOSE, SATURATED.
6.5'-7.0'	CLAY BROWN F SAND, LITTLE FINE GROUND, TRACE MIOC SAND, TRACE SILT, MODERATELY LOOSE, SATURATED.
8.0'-9.0'	CLAY BROWN FINE SAND AND FINE GROUND, TRACE SILT, LOOSE, SATURATED.
10.0'-10.4'	SAA

- BORING TRAILER GRADED TO GROUND w/ ~ 30 GALLONS TYPE I PORTLAND 5% BENTONITE GROUT.

SCREEN 5-10'

3/5/09

PZ-01 ABANDONMENT

(PZ)

AREAS Row Kuno

MATERIALS GAA/SWIFT, JACK SHARPES

CAN. STEVE BOOM

EQUIPMENT CME SS LC TRACK MOUNTED RIG, 4 1/4" ISO HSA

PZ-01 CINDERELLA DEPTH: 13' BGS

Σ 9.2' (TIC) 6' BGS

- OVERDRILLING PZ-01 w/ 4 1/4" ISO HSA TO 13' BGS. ALL MATERIALS DESTROYED DURING OVERDRILLING. TANKING GROUTED BOREHOLE w/ ~ 45 GALLONS TYPE I PORTLAND / 5% BENTONITE GROUT.

3/5/09 : 3/12/09 MW-6 Pilot Borehole (20)
 APCASIS Row Kuna
 Mureco Gary Swift, Jack Sanders
 Cam: Steve Broom
 Equipment CMG S5 LC TRACK MOUNTED RIG, 4 1/4" IS HSA, 3" x 2"
 SPLISPODS, 1YDIA AUTOMATIC HAMMER, 30" FAI, 12 1/4" DO
 HSA

Time	INT (hr)	DEC (hr)	BLIND (G)	N	Comments
1500-1509	0-3'	-	CONTINUOUS 1/4" HSA THROUGH 21 AA STONE PAD		
1509	3-5	1.3'	19-14-4-4	18	
1516	5-7	1.2'	2-2-2-1	3	
1535	7-9	1.3'	2-2-2-3	4	7.8'
1540	9-11	1.2'	4-8-11-15	19	
1548	11-13	1.0'	20-14-7-6	21	

3/12/09 MW-6 CABLE INSTALLATION & WELL CONSTRUCTION DETAILS
 (WELL CONSTRUCTION)

- 10" STEEL CASING GROUTED 0-7.4' BGS w/ ~50 GALLONS TYPE I PORTLAND / 5% BENTONITE GROUT.
- 2" SCH. 40 TYPE 304 SS VIB WIRE WRAP 0.010" SCREEN 7.9'-12.9' BGS
- 2" ID SCH. 40 TYPE 304 SS RISER 3.0' ABS ~ 7.9' BGS
- GRADE #1 K&E SILICA SAND PACK 7.4'-12.9' BGS (3 ABS)
- 3/8" BENTONITE CHIP SEAL 5.4'-7.4' BGS
- TYPE I PORTLAND / 5% BENTONITE GROUT 0-5.4' BGS
- STEEL PROTECTIVE CASING 3.2' ABS - 1.8' BGS

3/5/09 MW-6 Pilot Borehole (20)

INTERVAL Description

- 0-3' 21 AA STONE PAD
 3.0'-3.9' SAA
 3.9'-4.3' DARK GRAY Silt/CLAY, TRACE F.S.S., TRACE ORGNZLS (ROOTS), MOIST (FROST)
 5.0'-6.2' DARK GRAY/BROWN MIXING w/ DARK GRAY/BLACK Silt/CLAY, TRACE INTERMEDIATE F.S.S. LAMINATIONS, TRACE ORGNZLS, SOFT, MOIST.
 7.0'-7.4' SAA
 7.4'-8.3' DARK GRAY/BROWN F.S.S., LITE Silt, TRACE ORGNZLS (ROOTS), MOIST, D.C. ~ 7.8' ABS
 9.0'-10.2' GRAY BROWN FOC SAND AND FOC GRNCL, TRACE Silt, Dense, SATURATED, CALCAREOUS DEPOS. AND ACCUMULATED GRNCL.
 11.0'-12.0' SAA, CALCAREOUS DEPOS. NOT EVIDENT

- Boring TRIMME GROUTED TO GRADE w/ ~30 GALLONS TYPE I PORTLAND / 5% BENTONITE GROUT.

SCALE 7.9-12.9

3/5/09 : 3/12/09 MW-6 Prior Borings

(20)

APPROX ROW KUNA

MARECO GARY SWIFT, JACK SANDERS

CAM: STEVE BROWN

EQUIPMENT CMG S5 LC TRACK MOUNTED RIG, 4 1/4" IS HSA, 3" x 2"

SPLITSPODS, 1400 LB AUTOMATIC HAMMER, 30" FALL, 12 1/4" DO
HSA

TIME	INT (H)	DEC (H)	BLOW (G)	N	COMMENTS
1500-1509	0-3'	-	CONTINUOUS 1/4" HSA THROUGH 21 AA STONE PAV		
1509	3-5	1.3'	19-14-4-4	18	
1516	5-7	1.2'	2-2-2-1	3	
1535	7-9	1.3'	2-2-2-3	4	7.8'
1540	9-11	1.2'	4-8-11-15	19	
1548	11-13	1.0'	20-14-7-6	21	

3/12/09 MW-6 CABLE INSTALLATION & WELL CONSTRUCTION DETAILS
(WELL CONSTRUCTION)

- 10" STEEL CASING GROUTED 0-7.4' BGS w/ ~50 GALLONS TYPE I PORTLAND / 5% BENTONITE GROUT.
- 2" SCH. 40 TYPE 304 SS VIB WIRE WRAP 0.010" SCREEN 7.9'-12.9' BGS
- 2" ID SCH. 40 TYPE 304 SS RISER 3.0' ABS ~ 7.9' BGS
- GRADE #1 K&E SILICA SAND PACK 7.4'-12.9' BGS (3 ABS)
- 3/8" BENTONITE CHIP SEAL 5.4'-7.4' BGS
- TYPE I PORTLAND / 5% BENTONITE GROUT 0-5.4' BGS
- STEEL PROTECTIVE CASING 3.2' ABS - 1.8' BGS

3/5/09

MW-6 Prior Borings

(20)

INTERVAL

DESCRIPTION

0-3' 21 AA STONE PAV

3.0'-3.9' SAA

3.9'-4.3' DARK GRAY SILT/CLAY, TRACE F.S.S., TRACE ORBITALS (ROOTS),
MOIST (FROST)

5.0'-6.2' DARK GRAY/BROWN MIXING w/ DARK GRAY/BLACK SILT/CLAY,
TRACE INTERMITTENT F.S.S. LAMINATIONS, TRACE ORBITALS, SOFT,
MOIST.

7.0'-7.4' SAA

7.4'-8.3' DARK GRAY/BROWN F.S.S., LITE SILT, TRACE ORBITALS
(ROOTS), MOIST, D.C. ~ 7.8' ABS

9.0'-10.2' GRAY BROWN FOC SAND AND FOC GRAVEL, TRACE SILT, DENSE,
SATURATED, CALCAREOUS DEPOSITS, TWO ALUMINUM DO GRIND.

11.0'-12.0' SAA, CALCAREOUS DEPOSITION NOT EVIDENT

- BORING TERMINATE GROUND TO GRADE w/ ~30 GALLONS TYPE I PORTLAND /
5% BENTONITE GROUT.

SCALD 7.9-12.9

3/6/09 Daily Log RDH

WEATHER 57°F AM, OVERCAST

0700 RDK ON SITE, PREPARE FOR CONTINUATION OF PILOT BORING/CASING INSTALLATIONS.

0730 MATECO ON SITE, COMPLETE PAPERWORK, PREPARE FOR MW-6 CASING INSTALLATION.

0915 MW-6 10" CASING INSTALLATION COMPLETE

0915 - 0955 HIGH PRESSURE STEAM CLEAN AXES/TOOLS, MOBILE TO MW-2

1145 MW-2 PILOT BORING COMPLETE, TRIMMING GLOVES.

1215 ALL OFF SITE

1930 RDK ARRIVES IN SYRACUSE

3/9/09 Daily Log RDH

WEATHER OVERCAST, 32°F AM

0700 RDK MEETS UP W/ CASING SUPPLIER ON SOUTH SIDE, BEARS OVER TO NORTH SIDE

0730 MATECO CURRENTLY ON SITE, BEING CASING SUPPLIER BACK ON NORTH SIDE TO OFF LOAD 10" STREET CASING.

0745 MATECO PICKS UP 6' - 10" SECTION OF CASING, TANKS/SUPPLIES ETC. FROM SOUTH SIDE STAGING AREA, TANK UP W/ H2O.

0845 STEVE BOON (CAR) MAJOR OVERSIGHT ON SITE

1020 MW-2 10" CASING INSTALLATION COMPLETE.

1020 MOBILE TO MW-7. HIGH PRESSURE STEAM CLEAN AXES/TOOLS ETC.

1120 RDK COORDINATES MW-7 10" CASING INSTALLATION DEPTH TO 6.2' W/ AQUE CONDUIT (STEVE BOON MAJOR) COORDINATES.

1136 MW-7 PILOT BORING COMPLETE

1230 - 1330 MATECO LUNCH

1410 MW-7 10" STREET CASING INSTALLATION COMPLETE.

1415 HIGH PRESSURE STEAM CLEAN AXES/TOOLS, MOBILE TO MW-3/ SETUP

1500 RDK COORDINATES MW-3 10" CASING DEPTH 4'-4" DEEP w/ AQUE CONDUIT (MAJOR COORDINATES).

1645 MW-3 10" CASING INSTALLATION COMPLETE

1645 - 1730 HIGH PRESSURE STEAM CLEAN AXES/TOOLS, MOBILE/SETUP @ MW-8, WINTER RIG, SITE CLEANUP

1730 OFF SITE

3/6/09 : 3/12/09 MW-2 ALOT BOR-26

(P)

ARADIS ROW K140

MATECO: GARY SWIFT, JACK SANDERS

CAM: STEVE BOOM

EQUIPMENT: CMES LC TRACK MOUNTED A16, 12 1/4" IS HSA, 1/4" IS HSA, 3"x2' SPLITSPOONS, 14018 AUTOMATIC HAMMER, 30" FALL

TIME	INT (hr)	REC (hr)	BLMS (6")	N	COMMENTS
1000-1006	0-4'	-	CONTINUOUS HSA THROUGH 21 AA STONE PAD		
1007	4-6	1-6	2-2-2-4	4	
1014	6-8	1-2'	2-1-1-3	2	
1018	8-10	1-1'	2-4-6-6	10	7.5'
1026	10-12	1-1'	5-4-5-10	9	

MW-2 CASING INSTALLATION

- 10" STEEL CASING GRANTED 0-6' A6S w/ ~ 40 GALLONS TYPE I PORTLAND/5% BENTONITE GROUT.

3/12/09 MW-2 WELL CONSTRUCTION DETAILS

- 2" IS SCH. 40 TYPE 304 SS VEE WIRE WRAP 0-010" SCREW 7.0-12.0' A6S
- 2" IS SCH. 40 TYPE 304 SS RISER 3.0' A6S-7.0' A6S
- GRADE #1 K:6 SILICA SAND PACK 6.5'-12.0' A6S (3 BAGS)
- 10" STEEL CASING 0-6' A6S
- 3/8" BENTONITE CHIP SEAL 4.5-6.5' A6S
- TYPE I PORTLAND/5% BENTONITE GROUT 0-4.5' A6S
- STEEL PROTECTIVE CASING 3-2' A6S-1.8' A6S

3/6/09

MW-2 ALOT BOR-26

(P)

INTERVAL

DESCRPTION

0-4' 21 AA STONE PAD

4.0-4.2 DARK GRAY/BLACK TOPSOIL

4.2-5.6 GRAY BROWN SHINY CLAY, MODERATELY SOFT, TRACE ORGANICS (ROOTS), MOIST/WEET.

6.0-6.5 OLIVE BROWN L.SHA, TRACE SILT, LOOSE, WET/SATURATED

6.5-7.2' LIGHT GRAY BROWN GRASS TO BROWN L.SHA, TRACE SILT, TRACE SHELS, SATURATED.

8.0-8.7' LIGHT GRAY BROWN L.SHA, TRACE SILT, TRACE SHELS, SATURATED.

8.7-9.1' SHA GRASS TO UP LITTLE/SOME FLOC GRUEL

10.0-11.1 BROWN FLOC SAND AND FLOC GRUEL, TRACE SILT, TRACE CALCAREOUS DEPOSITION ON GRUEL, MODERATELY LOOSE, SATURATED.

- BOR-26 TURNING GRADED TO GRADE w/ ~ 30 GALLONS TYPE I PORTLAND/5% BENTONITE GROUT

SCREW 7-12'

3/9/09 3/12/09 MW-7 Pilot Boring (20)

ARCASIS Row KWD

MARECO GAA/Smith, JACK SANDERS

CAM SERVE ROOM

EQUIPMENT Cam & SS LC TRACK MONITOR Rig, 4 1/4" ES NSA, 12 1/4" ES NSA, 3" x 2' SPURSpoons, 140 lb AUTOMATIC HAMMER, 30" (L)

TIME	INT (hr)	REL (hr)	BLIND (hr)	N	Comments
1050 - 1055	0-4'	-	-	-	CONTINUOUS NSA THROUGH 21 AA STONE PADS
1055	4-6'	1-2'	3-3-3-4	6	
1102	6-8'	1-6'	2-2-2-7	4	6.5'
1107	8-10"	1-3'	2-3-3-8	6	
1113	10-12"	1-0'	7-8-10-26	18	

- 10" STEEL CASING GROUNDED 0-6.2' BGS w/ ~ 45 GALVNS TYPE # PORTLAND / 5% BENTONITE GROUT

3/12/09 MW-7 Well CONSTRUCTION DETAILS

- 2" ID SCH. 40 TYPE 304 SS WIRE W/ 0.010" SCREEN 6.7' - 11.7' BGS
- 2" ID SCH. 40 TYPE 304 SS RISER 3-0' AGS - 6.7' BGS
- 6 MAE #1 K/E SAVER SANDPAC 6.2' - 11.7' BGS (3 BGS)
- 10" STEEL CASING 0-6.2' BGS
- 3/8" BENTONITE CHIP SEAL 4.2-6.2' BGS
- TYPE I PORTLAND / 5% BENTONITE GROUT 0-4.2' BGS
- STEEL PROTECTIVE CASING 3.2' AGS - 1.8' BGS

3/9/09 MW-7 Pilot Boring (20)

INTERVAL DESCRIPTION

0-4-0' 21 AA STONE PADS

4-0-5-2' GRAY/BROWN Silty Clay, Trace debris (ROOTS), Trace V. F. SAND, MODERATELY SOFT, MOIST, DARK GRAY/BLACK ~ 4.8-5' BGS.

6-0'-6-2' DARK GRAY/BLACK Silty Clay, Trace debris (ROOTS), Trace F SAND, MOIST

6-2'-7-0' DARK GRAY/BROWN F SAND, LITTLE SILT, MOIST (SATURATED) ~ 6.5' BGS

7-0'-7-6' LIGHT GRAY/BROWN F SAND, GRASSING w/ LITTLE MOD SAND, LITTLE FINE GRAY/P ~ 7.4', TRACE SILT, TRACE SHELLS, SATURATED

8-0'-8-7' LIGHT GRAY/BROWN FOC SAND AND FOC GRAVEL, TRACE SILT, TRACE SHELLS, CALCAREOUS DEPOSITION ON GRAVEL, MODERATELY LOOSE, SATURATED

8-7-9-3' LIGHT GRAY/BROWN CALCAREOUS F SAND, LITTLE SILT, TRACE SHELLS, TRACE MOD SAND, LOOSE, SATURATED

10-0'-11-0' LIGHT GRAY/BROWN CALCAREOUS FOC SAND AND FOC GRAVEL, TRACE SILT, MODERATELY LOOSE, SATURATED, CALCAREOUS DEPOSITION PREVALENT ON GRAVEL.

- BORING TRUNK GROUNDED TO GRADE w/ ~ 30 GALVNS TYPE I PORTLAND / 5% BENTONITE GROUT

Screen 6.7' - 11.7'

3/9/09 3/12/09 MW-7 Pilot Boring (20)

ARCASIS Row Kuno

MATECO GAA/Smith, JACK SANDERS

CAM SERVE ROOM

EQUIPMENT Cam & SS LC TRACK MOUNTED Rig, 4 1/4" ES HSA, 12 1/4" ES HSA, 3" x 2' SPURSpoons, 140 lb AUTOMATIC HAMMER, 30" LAM

TIME	INT (hr)	REL (hr)	BLOW (G)	N	Comments
1050 - 1055	0-4'	-	-	-	CONTINUOUS HSA THROUGH 21 AA STONE PADS
1055	4-6'	1-2'	3-3-3-4	6	
1102	6-8'	1-6'	2-2-2-7	4	6.5'
1107	8-10"	1-3'	2-3-3-8	6	
1113	10-12"	1-0'	7-8-10-26	18	

- 10" STEEL CASING GROUNDED 0-6.2' BGS w/ ~ 45 GALLONS TYPE I PORTLAND / 5% BENTONITE GROUT

3/12/09 MW-7 Well CONSTRUCTION DETAILS

- 2" ID SCH. 40 TYPE 304 SS WIRE W/ 0.010" SCREEN 6.7' - 11.7' BGS
- 2" ID SCH. 40 TYPE 304 SS RISER 3-0' AGS - 6.7' BGS
- 6 MAE #1 K/E SAVER SANDPAC 6.2' - 11.7' BGS (3 BGS)
- 10" STEEL CASING 0-6.2' BGS
- 3/8" BENTONITE CHIP SEAL 4.2-6.2' BGS
- TYPE I PORTLAND / 5% BENTONITE GROUT 0-4.2' BGS
- STEEL PROTECTIVE CASING 3.2' AGS - 1.8' BGS

3/9/09 MW-7 Pilot Boring (20)

INTERVAL DESCRIPTION

0-4-0' 21 AA STONE PADS

4-0-5-2' GRAY/BROWN SILTY CLAY, TRACE ORBITALS (ROOTS), TRACE VIB. F SAND, MODERATELY SOFT, MOIST. DARK GRAY/BLACK ~ 4.8-5' BGS.

6-0'-6-2' DARK GRAY/BLACK SILTY CLAY, TRACE ORBITALS (ROOTS), TRACE F SAND, MOIST.

6-2'-7-0' DARK GRAY/BROWN F SAND, LITTLE SILT, MOIST (SATURATED @ ~ 6.5' BGS)

7-0'-7-6' LIGHT GRAY/BROWN F SAND, GRASSING w/ LITTLE MUD SAND, LITTLE FINE GRAY/P ~ 7.4', TRACE SILT, TRACE SHELLS, SATURATED.

8-0'-8-7' LIGHT GRAY/BROWN FOC SAND AND FOC GRAVEL, TRACE SILT, TRACE SHELLS. CALCAREOUS DEPOSITION ON GRAVEL, MODERATELY LOOSE, SATURATED.

8-7'-9-3' LIGHT GRAY/BROWN CALCAREOUS F SAND, LITTLE SILT, TRACE SHELLS, TRACE MUD SAND, LOOSE, SATURATED.

10-0'-11-0' LIGHT GRAY/BROWN CALCAREOUS FOC SAND AND FOC GRAVEL, TRACE SILT, MODERATELY LOOSE, SATURATED. CALCAREOUS DEPOSITION PREVALENT ON GRAVEL.

- BORING TRUNK GROUNDED TO GRAVEL w/ ~ 30 GALLONS TYPE I PORTLAND / 5% BENTONITE GROUT

Screen 6.7' - 11.7'

3/9/09 ; 3/12/09 MW-3 Pilot Bore 26

(25)

ARCADIS Rod Kutt

MATECO Gary Swift, Jack Sanders

CAM: STEVE BOOM

EQUIPMENT CME SS LC THICK MONITORED RIG, 12 1/4" ID HSA, 4 1/4"
I.D. HSA, 3" x 2' SPLIT SPACERS, 140 LB AUTOMATIC
NANUM, 30" / 11

TIME	INT (ft)	ACC (ft)	BINS (G)	N	COMMENTS
1445	0-2'	-	CONTINUOUS 4 1/4" ID HSA THROUGH ZIM STONE PAD		
1450	2-4'	1.8'	3-2-2-2	4	
1453	4-6'	0.8'	2-2-2-2	4	
1501	6-8'	1.4'	1-1-4-8	5	Σ 65'
1506	8-10'	0.8'	8-17-12-21	29	
1514	10-12'	0.7'	12-37-28-39	65	

- 10" STEEL CASING GRouted 0-4.4' BGS w/ ~ 30 GALLONS

TYPE I PORTLAND 15% BENTONITE GROUT.

3/12/09 MW-3 WELL CONSTRUCTION DETAILS

- 2" ID SCH 40 TYPE 304 SS VEE WIRE WRAP 0-0.10" SCREW 6-0-11.0' BGS

- 2" ID SCH 40 TYPE 304 SS RISER 3-0' AGS-6-0' BGS

- GRADE #1 KIE SILICA SAND PACK 5-5'-11-0' BGS (3 BAGS)

- 10" STEEL CASING 0-4.4' BGS

- 3/8" BENTONITE CHIP SEAL 3-0'-5-5' BGS

- TYPE I PORTLAND 15% BENTONITE GROUT 0-3-0' BGS

- STEEL PROTECTIVE CASING 3-2' AGS-1-8' BGS

3/9/09

MW-3 Pilot Bore 26

(26)

INTERVAL

DESCRIPTION

0-2.0' ZIM STONE PAD

2-2.3' SAA

2.3-2.7' GRAY/BROWN INTERBEDDED SILTY CLAY AND F.SAND, TENSILE STRIPS, ROOTS
MOIST

2.7-3.8' GRAY/BROWN SILTY CLAY, TENSILE STRIPS LAMINATIONS THROUGHOUT,
GRADING TO DARK GRAY/BLACK, MODERATELY SOFT, MOIST.

4.0-4.4' DARK GRAY/BLACK SILTY CLAY, MODERATELY SOFT, MOIST, SLIGHT
ODOR.

4.4-4.8' DARK GRAY/BLACK SILTY F.SAND, TENSILE STRIPS (ROOTS),
MOIST/WET.

6.0-6.8' SAA, SATURATED.

6.8-7.4' LIGHT GRAY/BROWN SILTY F.SAND GRADING UP LITTLE FINE SAND,
LITTLE FINE GRADUAL EN 7.1', SATURATED. CALICHEOUS DEPOSITION
PREVALENT ON GRAVEL.

8.0-8.8' LIGHT GRAY/BROWN CALICHEOUS FINE SAND AND FINE GRAVEL, TENSILE
STRIPS, CALICHEOUS DEPOSITION PREVALENT ON GRAVEL, MODERATELY
FIRM, SATURATED.

10.0-10.7' SAA

- Borehole TENSILE GROUTED TO GRAVEL w/ ~ 30 GALLONS TYPE I PORTLAND/
15% BENTONITE GROUT.

SCREW 6-11'

3/10/09

MW-8 Pilot Borehole

(22)

ARCADIS

ROW KUMU

MATEO:

GARY SOFT, JACK SWANS

CON:

STEVE BOOM

EQUIPMENT:CME SS LC TRACK MOWER RIG, 12 1/4" ID HSA, 4 1/4"
ID HSA, 3"x2' SPLITSPACES, 140 LB AUTOMATIC HAMMER,
30" KALI

TIME	INT (hr)	REC (hr)	BROWS (6")	N	Comments
0925	0-2'	CONTINUOUS	4 1/4" ID HSA	THROUGH 21 AA STONE PAD	
0927	2-4'	1.7	4-4-5-6	9	
0931	4-6'	0.8'	2-2-2-2	4	
0938	6-8'	0.5'	2-2-2-2	4	5.8'
0943	8-10'	0.7'	2-2-2-2	4	- LIKELY COMPRESSION OF LINES, SAND PROBABLY @ 9.8'
0953	10-12'	1.2'	3-7-9-22	16	
1012	12-14'	0.4'	8-49-50/02	Ref	
1020	14-16'	0.8'	5-7-9-10	16	
1103	8-10'	0.2'	MW-2-3-3	5	- STOPPED AHEAD, RESUMING TO VERIFY SAND COUNTRY.

10" STEEL CASING GROUND ~ 0.5' BGS - 10.3' BGS w/ ~ 70 GALLONS
TYPE I PORTLAND / 5% BENTONITE GROUT. (CASING ~ 0.5' LOWER
THAN PLANNED DUE TO WEIGHT OF CASING / SOFTNESS OF SOIL.)

* SEE 3/12/08 FOR MW-8 CONSTRUCTION DETAILS

3/10/09

MW-8 Pilot Borehole

(23)

INTERVALDESCRIPTION

0-2' 21 AA STONE PAD

2.3' SAA

2.3-3.7' GRAY/BROWN SILT/CLAY, TRACE ORGANICS (ROOTS), MODERATELY
SOFT, MOIST. TRACE INTERMEDIATE & SAND LAMINATIONS
& POSSIBLE SAND COUNTRY @ 3.7'

4.0-4.8' DARK GRAY/DARK SILT/CLAY, TRACE ORGANICS (ROOTS, VEG),
MODERATELY SOFT, MOIST.

6.0-6.5' GRAY/BROWN SILT/CLAY, TRACE MIOC SAND, TRACE ORGANICS,
SOFT, MOIST.

8.0-8.5' DARK GRAY/BROWN SILT/CLAY, TRACE MIOC SAND, SOFT, MOIST

8.5-8.7' GRAY/BROWN SAND, LITTLE SILT, MOIST.

10.0'-10.3' SAA, TRACE ORGANICS (WOOD, SEEDS), MOIST

10.3-11.2' GRAY/BROWN FINE SAND AND FINE GRAVEL, TRACE
SILT, CARBONACEOUS DEPOSITION ON GRAVEL, MODERATELY
DENSE, SATURATED

12.0-12.4' GRAY COBBLE, SOME FINE SAND AND FINE GRAVEL, STRUCTURED

14.0'-14.8' GRAY/BROWN FINE GRAVEL, LITTLE MIOC GRAVEL, LITTLE
FINE SAND, TRACE SILT, & MODERATELY DENSE, SATURATED

8.0-10.0' SILT 8-9.8, GRAY SAND, TRACE SILT
9.8'-10.0'

- BOREHOLE TERMINATING GROUTED w/ ~ 30 GALLONS BENTONITE GROUT

SCREW 10.8-15.8'

3/10/09

Daily Log

(28)

WEATHER

39°F AM, Rain

0730

ROK, MATECO ON SITE, PREPARE FOR CONTINUATION
OF MW INSTALLATIONS. TAILGATE SAFETY MEETING.

0730-0925

Rain Delay

1030-

TURNING GROUT 1ST MW-8 PILE BOREING

1115

ROK CASHES MW-8 10" CASING INSTALLATION @ 9.8'
BGS w/ DRUG CURED. MAJOR CONCURRENCE (STEVE BORN)

1125

SG-5

70% Z'

1330

MW-8 10" CASING INSTALLATION COMPLETE

1330-1400

HIGH PRESSURE STEAM CLEAN AUGERS/TOOLING

1400-1500

MATECO LUNCH

1500-1540

STEAM CLEAN RIG: ALL TOOLING PRIOR TO MONITORING WELL
INSTALLATIONS.

1540-1630

MOBE RIG TO MW-9 LOCATION.

1630

OFF SITE (HEAVY RAIN)

3/11/09

Daily Log

(29)

WEATHER

28°F, WINDY, OVERCAST AM

0700

ROK ON SITE, PREPARE FOR MONITORING WELL INSTALLATIONS

0730

STEVE BORN / MATECO ON SITE, MATECO WASHING & DRAGGING.

1100

MW-09 INSTALLATION COMPLETE

1100-1130

HIGH PRESSURE STEAM CLEAN AUGERS/TOOLING, MOBILIZE TO MW-5

1113

SG-5 MISSING / DESTROYED

1230

MW-05 CONSTRUCTION COMPLETE UP TO BENTONITE SEAL

1230-1330

MATECO LUNCH

1400

MW-05 INSTALLATION COMPLETE

1400-1515

HIGH PRESSURE STEAM CLEAN AUGERS/TOOLING, MOBILIZE TO MW-4

1645

MW-04 INSTALLATION COMPLETE

1645-1700

HIGH PRESSURE STEAM CLEAN AUGERS/TOOLING, MOBILIZE TO MW-1

1800

MW-01 INSTALLATION COMPLETE UP TO BENTONITE SEAL

1815

MW-01 INSTALLATION COMPLETE

1830

OFF SITE

3/10/09

Daily Log

(21)

WEATHER

39°F AM, Rain

0730

ROK, MATECO ON SITE, PREPARE FOR CONTINUATION
OF MW INSTALLATIONS. TAILGATE SAFETY MEETING.

0730-0925

Rain Delay

1030-

TURNING GROUT 1ST MW-8 PILE BOREING

1115

ROK CHECKS MW-8 10" CASING INSTALLATION @ 9.8'
BGS w/ DRILL CROWN. MAJOR CONCURRENCE (STEVE BORN)

1125

SG-5 70% Z'

1330

MW-8 10" CASING INSTALLATION COMPLETE

1330-1400

HIGH PRESSURE STEAM CLEAN AUGERS/TOOLING

1400-1500

MATECO LUNCH

1500-1540

STEAM CLEAN RIG: ALL TOOLING PRIOR TO MONITORING WELL
INSTALLATIONS.

1540-1630

MOBE RIG TO MW-9 LOCATION.

1630

OFF SITE (HEAVY RAIN)

3/11/09

Daily Log

(22)

WEATHER

28°F, Windy, OVERCAST AM

0700

ROK ON SITE, PREPARE FOR MONITORING WELL INSTALLATIONS

0730

STEVE BORN / MATECO ON SITE, MATECO WORKING & DRILLING.

1100

MW-09 INSTALLATION COMPLETE

1100-1130

HIGH PRESSURE STEAM CLEAN AUGERS/TOOLING, MOBILIZE TO MW-5

1113

SG-5 MISSING / DESTROYED

1230

MW-05 CONSTRUCTION COMPLETE UP TO BENTONITE SEAL

1230-1330

MATECO LUNCH

1400

MW-05 INSTALLATION COMPLETE

1400-1515

HIGH PRESSURE STEAM CLEAN AUGERS/TOOLING, MOBILIZE TO MW-4

1645

MW-04 INSTALLATION COMPLETE

1645-1700

HIGH PRESSURE STEAM CLEAN AUGERS/TOOLING, MOBILIZE TO MW-1

1800

MW-01 INSTALLATION COMPLETE UP TO BENTONITE SEAL

1815

MW-01 INSTALLATION COMPLETE

1830

OFF SITE

3/12/09

Daily Log

RK

WEATHER

19°F, LIGHT SNOW AM

0700

RK @ SITE, PREPARE FOR CONTINUATION OF MONITORING
WELL INSTALLATIONS.

0730

MATECO/STEVE BOON @ SITE, MATECO UNLOADING
EQUIPMENT.

1115

MW-6 INSTALLATION COMPLETE

1230-1330

MATECO LUNCH

1345

MW-2 INSTALLATION COMPLETE

1520

MW-7 INSTALLATION COMPLETE

MW-8 CONSTRUCTION DETAILS

- 2" ID SCH. 40 TYPE 304 SS VEE WIRE WRAP 0-0.10' SCALING 10-8'-15-8' BGS
- 2" ID SCH. 40 TYPE 304 SS RISER 3-0' ABS-10-8' BGS
- GRADE #1 K-6 SILICA SANDPACK 10-3'-15-8' BGS (2 BAGS)
- 10" STEEL CASING 0-5' BGS-10-5' BGS
- 3/8" BENTONITE CHIP SEAL 8-3'-10-3' BGS
- TYPE I PORTLAND / 5% BENTONITE GROUT 0-8-3' BGS
- STEEL PROTECTIVE CASING 3-2' ABS-1-8' BGS

1745

MW-3 INSTALLATION COMPLETE

1800

MW-8 INSTALLATION COMPLETE

1800-1900

MOVE EQUIPMENT TO STAGE AREA, STAKE OUT TIE LINES OF
CAT 262B.

3/13/09

Daily Log

RK

WEATHER

PARTLY CLOUDY, 15°F AM WARMING TO LOW 40'S

0730

RK/MATECO @ SITE, PREPARE TO REBUILD RIG/EQUIPMENT
TO SOUTH SIDE.

3/16/09 : 3/18/09 MW-12 Pilot Boring

(221)

ARCADIS Ron Kuhn

MATECO: Gary Swift, Jack Sanders

CDM Steve Boom

EQUIPMENT CME SS LC TRACK MOUNTED RIG, 4 1/4" ID HSA, 12 1/4" ID HSA,
3"x2" SPLITSPRINGS, 140 LB AUTO MATIC HAMMER, 30" FALL

TIME	INT (ft)	REC (ft)	BLMS (6")	AL	COMMENTS
1130	0-3'	4 1/4" ID HSA	THROUGH 21 AA STONE PAV		
1134	3.5	0.3'	4-6-10-6	16	4.5'
1142	5-7	1.1'	2-2-2-1	4	
1152	7-9	0.7'	3-4-1-6	5	
1159	9-11	1.2'	21-21-20-13	41	

- 10" STEEL CASING GRouted 0-3.5' BGS w/ ~ 30 GALLONS TYPE I PORTLAND / 5% BENTONITE GROUT.

3/18/09 MW-12 WELL CONSTRUCTION DETAILS

- 2" ID SCH. 40 TYPE 304 SS VEE WIRE WRAP 0-DID "SCREWED" 4.0-9.0' BGS
- 2" ID SCH. 40 TYPE 304 SS RISER 3.0' AGS - 4.0' BGS
- GRADE #1 K&G SILICA SANDPACK 3.5' - 9.0' BGS (3.5 BGS)
- 10" STEEL CASING GRouted 0-3.5' BGS
- 3/8" BENTONITE CHIP SEAL 2.0' - 3.5' BGS
- TYPE I PORTLAND / 5% BENTONITE GROUT 0-2.5' BGS
- STEEL PROTECTIVE CASING 3.2' AGS - 1.8' BGS

3/16/09

MW-12 Pilot Boring

(222)

INTERVAL

DESCRIPTION

0-3' 21 AA STONE PAV

3.0-3.3' GRAY BROWN FINE SAND, TRACE Silt, TRACE CLAY, TRACE SILT, SATURATED (2 ATTEMPTS, NO RECORD) 1st ATTEMPT.)

5.0-6.1' GRAY BROWN GRASS TO DARK GRAY BROWN FINE SAND, TRACE Silt, TRACE CLAY, TRACE SILT, LOOSE, SATURATED.

7.0-7.7' DARK GRAY BROWN FINE SAND, TRACE MUD SAND, TRACE SILT, TRACE SHELLS, LOOSE, SATURATED.

9.0'-9.4' SAA

9.4-9.7' LIGHT GRAY CALCAREOUS FINE SAND, LITTLE SILT, TRACE MUD SAND, TRACE CLAY, SATURATED.

9.7-10.2' OLIVE BROWN FINE SAND AND FINE CLAY, TRACE SILT, DENSE, SATURATED.

- BORING TUBING GRouted w/ ~ 30 GALLONS TYPE I PORTLAND / 5% BENTONITE GROUT

SCREWED 4-9
SAND 3-5-9
BENT 2-3-5

3/16/09

Daily Log

(20)

WEATHER

Sunny, High 40's, Low 50's

0500-1100

TRAVEL FROM SYR NY TO PLAINFIELD, NJ

MATECO TANKING UP w/ H₂O, HIGH PRESSURE STEAM

CRACKING AUGERS/TOOLING

1215-1315

MATECO LUNCH

1415

X MW-12 10" CASING INSTALLATION COMPLETE

1415

HIGH PRESSURE STEAM CRACK AUGERS/TOOLING, MOBILIZE TO MW-14.

1600

X MW-14 INSTALLATION COMPLETE.

1600-

MATECO COMPLETES MW SURFACE CONDUITS ON ADJUTY SIDE (ADD GRAVEL CONCRETE MIX TO STEEL PROTECTIVE COVERS WHERE GRANT HAS SETTING)

3/17/09

Daily Log

(21)

WEATHER

Sunny, 70°F

0715

PVC ON SITE, READY FOR CONTINUATION OF NEW INSTALLATIONS

X 0900

MW-11 WELL CONSTRUCTION COMPLETE

0900-0930

HIGH PRESSURE STEAM CRACK AUGERS/TOOLING, MOBILIZE TO MW-16

X 1030

MW-16 WELL CONSTRUCTION COMPLETE

1030-1100

HIGH PRESSURE STEAM CRACK AUGERS/TOOLING, MOBILIZE TO MW-13

1200

MW-13 WELL CONSTRUCTION COMPLETE

1200-1300

MATECO LUNCH

1500

MW-15 WELL CONSTRUCTION COMPLETE

1500-1530

HIGH PRESSURE STEAM CRACK AUGERS/TOOLING, MOBILIZE TO MW-12

WAGL INSTALL MW-12 ON 3/18/09 TO 10" CASING SET 24" DBH

1530-1700

SITE CLEANUP, MATECO LOADING SUPPLIES

1700

OFF SITE

3/18/09

Daily Log

(20)

WEATHER

OVERCAST, PERIODIC RAIN

0715

RDK / STEVE BOOM ON SITE, PREPARE FOR CONTINUATION
OF MW INSTALLATIONS.

0930

MW-12 INSTALLATION COMPLETE

0930

STEVE BOOM OFF SITE

0930 -

MATCHED STEAM CLOUDS FROM DRAIN / RIG, SITE CAMP

DRUM INVENTORY

21 EMPTY DRUMS (FOR WELL DEVELOPMENT/SAMPLES)

4 DRUMS DECON H2O / SOIL CUTTINGS

5 DRUMS SOIL CUTTINGS

3/18/09

SITE WIDE

(20)

LOCATIONΣ (FIC)Σ GRAND SURFACEFEET H2O

MW-1

6.06'

~ 3.06'

6.94'

MW-2

9.20'

~ 6.20'

5.80'

MW-3

8.23'

~ 5.23'

5.77'

MW-4

9.64'

~ 6.64'

4.86'

MW-5

9.59'

~ 6.59'

4.91'

MW-6

9.29'

~ 6.29'

6.61'

MW-7

9.70'

~ 6.70'

5.0'

MW-8

8.26'

~ 5.26'

10.54'

MW-9

12.97'

~ 9.97'

6.53'

MW-10

7.18'

~ 4.18'

5.32'

MW-11

6.50'

~ 3.50'

6.50'

MW-12

8.06'

~ 5.06'

3.94'

MW-13

7.75'

~ 4.75'

7.25'

MW-14

5.75'

~ 2.75'

6.25'

MW-15

6.70'

~ 3.70'

7.80'

Attachment 2

Groundwater Monitoring Well
Construction Logs

Date Start/Finish: 3/5/09 and 3/10/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" and 12.25" ID
Rig Type: CME-55
Sampling Method: 3" x 2' Split Spoon

Northing: 350961.4
Easting: 12772432.6
Casing Elevation: 708.9
Borehole Depth: 12' bgs
Surface Elevation: 706.1 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-01
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0										
0.5	705	1	0-2	1.6	3	5	NA		Dark gray-brown Silty CLAY, trace Organics (Roots), moist.	
1.5					3					
2.5		2	2-4	1.6	2	14	NA		Dark gray-black Silty CLAY, soft, slight odor, moist.	
3.5					9					
4.5					5				Brown fine SAND, little Silt, trace medium to coarse Sand, trace fine to medium Gravel, loose, wet.	
5.5					3				Dark gray-brown Silty fine SAND, moderately loose, moist to wet.	
6.5		3	4-6	2.0	2	6	NA		Dark gray-black Silty CLAY, moderately soft, moist.	
7.5					3					
8.5					10				Olive-brown Silty fine SAND, trace Clay, moderately dense, moist.	
9.5	700				4				Olive-brown fine SAND, trace Silt, trace medium to coarse Sand, wet.	
10.5		4	6-8	1.0	7	15	NA		Light gray-brown fine SAND, trace Silt, loose, saturated.	
11.5					8				Olive-brown fine SAND, little fine to coarse Gravel, trace medium to coarse Sand, trace Silt, moderately loose, saturated.	
12.5					19					
13.5		5	8-10	1.0	4	27	NA		Gray-brown fine to coarse SAND and fine to coarse GRAVEL, trace Silt, dense, saturated.	
14.5					11					
15.5					16					
16.5					16					
17.5	695	6	10-12	0.4	15	27	NA			
18.5					12					
19.5					7					
20.5										
21.5										
22.5										
23.5										
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96.5										
97.5										
98.5										
99.5										
100.5										

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929



Date Start/Finish: 3/6/09 and 3/12/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" and 12.25" ID
Rig Type: CME-55
Sampling Method: 3" x 2' Split Spoon

Northing: 350711.6
Easting: 12772517.2
Casing Elevation: 712.3
Borehole Depth: 12' bgs
Surface Elevation: 709.3 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-02
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
710										
0		NA	NA	NA	NA	NA	NA		No sampling - continuous Hollow Stem Auger through 21AA stone pad.	
705		1	4-6	1.6	2 2 2 4	4	NA		Dark gray-black TOPSOIL. Gray-brown Silty CLAY, moderately soft, trace Organics (Roots), moist to wet.	
5		2	6-8	1.2	2 1 1 3	2	NA		Olive-brown fine SAND, trace Silt, loose, wet to saturated. Light gray-brown grading to brown fine SAND, trace Silt, trace shells, saturated.	
700		3	8-10	1.1	2 4 6 6	10	NA		Light gray-brown fine SAND, trace Silt, trace shells, saturated. Light gray-brown fine SAND, grading with some to little fine to coarse Gravel, trace Silt, trace shells, saturated.	
10		4	10-12	1.1	5 4 5 10	9	NA		Brown fine to coarse SAND and fine to coarse GRAVEL, trace Silt, trace calcareous deposition on Gravel, moderately loose, saturated.	
695										
15										



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929

Date Start/Finish: 3/9/09 and 3/12/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" and 12.25" ID
Rig Type: CME-55
Sampling Method: 3" x 2' Split Spoon

Northing: 350339.2
Easting: 12772701.6
Casing Elevation: 711.7
Borehole Depth: 12' bgs
Surface Elevation: 708.8 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-03
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
710										
0		NA	NA	NA	NA	NA	NA		No sampling - continuous Hollow Stem Auger through 21AA stone pad.	
		1	2-4	1.8	3 2 2	4	NA		Gray-brown interbedded Silty CLAY and fine SAND, trace shells, trace Roots, moist.	
705									Gray-brown Silty CLAY, trace fine Sand laminations throughout, grading to dark gray-black, moderately soft, moist.	
		2	4-6	0.8	2 2 2	4	NA		Dark gray-black Silty CLAY, moderately soft, slight odor, moist.	
									Dark gray-black Silty fine SAND, trace Organics (Roots), moist to wet.	
-5		3	6-8	1.4	1 4 8	5	NA		Saturated 6.0' - 6.8' bgs.	
									Light gray-brown Silty fine SAND grading with little fine to coarse SAND, little fine to coarse Gravel at 7.1' bgs, calcareous deposition prevalent in Gravel, saturated.	
700		4	8-10	0.8	8 17 12 21	29	NA		Light gray-brown calcareous fine to coarse SAND and fine to coarse GRAVEL, trace Silt, calcareous deposition prevalent on Gravel, moderately dense, saturated.	
-10		5	10-12	0.7	12 37 28 39	65	NA			
695										
-15										



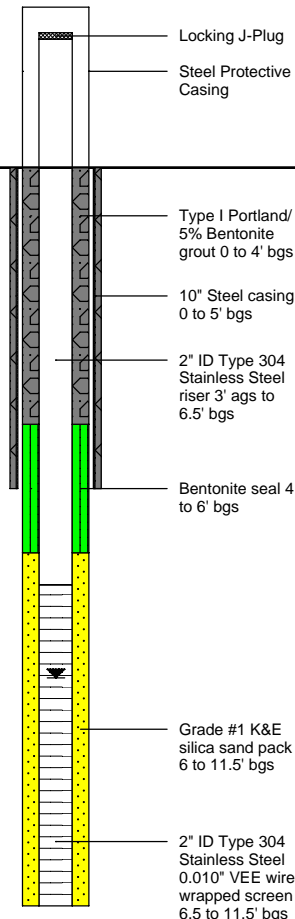
Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Horizontal Datum: NAD 83, Michigan South Zone
 Vertical Datum: NGVD 1929

Date Start/Finish: 11/13/2008, 3/4/09 and 3/11/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: CME-55
Sampling Method: 2" x 2' Split Spoon

Northing: 350154.4
Easting: 12773098.2
Casing Elevation: 713.5
Borehole Depth: 22' bgs
Surface Elevation: 710.7 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-04
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
										 <p>Locking J-Plug Steel Protective Casing Type I Portland/ 5% Bentonite grout 0 to 4' bgs 10" Steel casing 0 to 5' bgs 2" ID Type 304 Stainless Steel riser 3' ags to 6.5' bgs Bentonite seal 4 to 6' bgs Grade #1 K&E silica sand pack 6 to 11.5' bgs 2" ID Type 304 Stainless Steel 0.010" VEE wire wrapped screen 6.5 to 11.5' bgs</p>
0	710	NA	NA	NA	NA	NA	NA		No sampling - continuous Hollow Stem Auger through 21AA stone pad.	
		NA	NA	NA	NA	NA	NA			
-5	705	NA	NA	NA	NA	NA	NA			
		1	6-8	1.5	WOH 1 1	1	NA		Dark gray grading to dark gray-brown fine SAND, trace Silt, loose, wet.	
		2	8-10	0.6	2 2 3 3	5	NA		Light gray-brown fine to medium SAND, little coarse Sand, little fine to medium Gravel, trace Silt, little calcareous Silt/Sand-sized grains, saturated.	
-10	700	3	10-12	0.5	1 1 1 13	2	NA		Light gray calcareous fine to medium SAND, little fine to medium Gravel, trace coarse Sand, trace Silt (calcareous), saturated.	
		4	12-14	0.9	4 4 4 6	8	NA		Brown fine to medium GRAVEL, trace fine to coarse Sand, trace Silt, saturated.	
									Orange-brown Silty CLAY, moderately stiff, moist.	
-15	695	5	14-16	0.7	4 4 10 6	14	NA		Orange-brown fine to coarse SAND and fine to medium GRAVEL, trace Silt, saturated.	



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; WOH = Weight of Hammer.

Lithologic descriptions from pilot boring drilled on 11/13/08. Well installed 3/4/09 and 3/11/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929




Client: Kalamazoo River Study Group

Well/Boring ID: MW-04

Site Location:

Borehole Depth: 22' bgs

Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		6	16-18	0.6	6 6 8 11	14	NA		Orange-brown fine to coarse SAND and fine to medium GRAVEL, trace Silt, saturated.	
		7	18-20	0.5	15 9 7 12	16	NA		Dark gray fine SAND, trace Silt, saturated.	
20	690	8	20-22	0.3	5 5 8 12	13	NA		Orange-brown fine to coarse SAND and fine to medium GRAVEL, trace Silt, saturated.	
25	685									
30	680									
35	675									



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; WOH = Weight of Hammer.

Lithologic descriptions from pilot boring drilled on 11/13/08. Well installed 3/4/09 and 3/11/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929

Date Start/Finish: 11/14/2008, 3/4/09 and 3/11/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: CME-55
Sampling Method: 3" x 2' Split Spoon

Northing: 350154.3
Easting: 12773466.7
Casing Elevation: 713.7

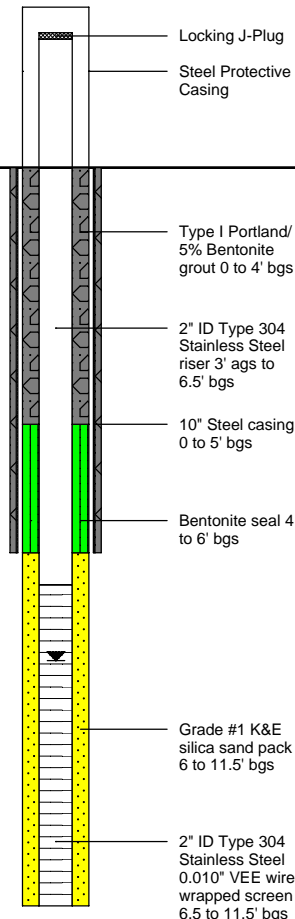
Borehole Depth: 22' bgs
Surface Elevation: 710.7 ft AMSL

Descriptions By: Ron Kuhn

Well/Boring ID: MW-05

Client: Kalamazoo River Study Group

Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
										 <p> Locking J-Plug Steel Protective Casing Type I Portland/ 5% Bentonite grout 0 to 4' bgs 2" ID Type 304 Stainless Steel riser 3' ags to 6.5' bgs 10" Steel casing 0 to 5' bgs Bentonite seal 4 to 6' bgs Grade #1 K&E silica sand pack 6 to 11.5' bgs 2" ID Type 304 Stainless Steel 0.010" VEE wire wrapped screen 6.5 to 11.5' bgs </p>
0	710	NA	NA	NA	NA	NA	NA		No sample - continuous auger through 21AA stone pad.	
5	705	1	4-6	1.0	3 1 1 1	2	NA		Gray-brown Silty CLAY, trace highly degraded Organics, damp. Gray-brown fine to medium SAND, trace Silt, trace Shells, moist. Dark gray Silty CLAY, moist. Dark gray fine SAND, trace Silt, saturated.	
		2	6-8	1.1	3 1 1 1	2	NA		Olive-brown grading to light gray (calcareous) fine SAND, trace Silt, trace Shells, saturated.	
10		3	8-10	0.4	7 9 10 10	19	NA		Light gray (calcareous) fine to medium SAND, little coarse Sand, trace fine to medium Gravel, trace Silt, saturated.	
	700	4	10-12	1.1	4 6 9 13	15	NA		As above, includes trace coarse Gravel.	
		5	12-14	1.4	23 15 10 8	25	NA		Gray-brown fine to medium SAND, trace coarse Sand, trace Silt, saturated. Gray-brown fine to coarse SAND and fine to medium GRAVEL, trace Silt, saturated. Dark gray fine to medium GRAVEL, little fine to coarse Sand, saturated.	
15	695	6	14-16	0.4	7 10 10 10	20	NA		Dark gray coarse SAND and fine GRAVEL, little fine to medium Sand, saturated.	



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

No recovery with 2" spoon from 6-10' bgs, used 3" spoon for remaining intervals. Lithology from pilot boring drilled on 11/14/08. Well installed 3/4/09 and 3/11/09.

Horizontal Datum: NAD 83, Michigan South Zone
 Vertical Datum: NGVD 1929



Client: Kalamazoo River Study Group

Well/Boring ID: MW-05

Site Location:

Borehole Depth: 22' bgs

Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		7	16-18	0.8	5 7 8 8	15	NA		Dark gray fine to coarse SAND, little fine to medium Gravel, saturated.	
		8	18-20	0.6	6 7 6 6	13	NA		Dark gray coarse SAND and fine GRAVEL, little fine to medium Sand, trace medium Gravel, saturated.	
20	690	9	20-22	0.0	6 9 9 9	18	NA		No recovery - likely same as above.	
25	685									
30	680									
35	675									



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

No recovery with 2" spoon from 6-10' bgs, used 3" spoon for remaining intervals. Lithology from pilot boring drilled on 11/14/08. Well installed 3/4/09 and 3/11/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929

Date Start/Finish: 3/5/09 and 3/12/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" and 12.25" ID
Rig Type: CME-55
Sampling Method: 3" x 2' Split Spoon

Northing: 350846.5
Easting: 12772491.1
Casing Elevation: 712.1
Borehole Depth: 13' bgs
Surface Elevation: 709.2 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-06
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
710										
0		NA	NA	NA	NA	NA	NA		No sample - continuous auger through 21AA stone pad.	
705		1	3-5	1.3	19 14 4 4	18	NA		Dark gray Silty CLAY, trace fine Sand, trace Organics (Roots), moist (frozen).	
5		2	5-7	1.2	2 2 2 1	4	NA		Dark gray-brown mixing with dark gray-black Silty CLAY, trace intermittent fine Sand laminations, trace Organics, soft, moist.	
		3	7-9	1.3	2 2 3	4	NA		Dark gray-brown fine SAND, little Silt, trace Organics (Roots), moist.	
700		4	9-11	1.2	4 8 11 15	19	NA		Gray-brown fine to coarse SAND and fine to coarse GRAVEL, trace Silt, dense, saturated, calcareous deposits on Gravel.	
10		5	11-13	1.0	20 14 7 6	21	NA		No calcareous deposits 11.0 - 13.0' bgs.	
695										
15										



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Horizontal Datum: NAD 83, Michigan South Zone
 Vertical Datum: NGVD 1929

Date Start/Finish: 3/9/09 and 3/12/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" and 12.25" ID
Rig Type: CME-55
Sampling Method: 3" x 2' Split Spoon

Northing: 350555.2
Easting: 12772534.6
Casing Elevation: 712.9
Borehole Depth: 12' bgs
Surface Elevation: 708.0 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-07
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
710										
0									No sample - continuous auger through 21AA stone pad.	
705		NA	NA	NA	NA	NA	NA			
5		1	4-6	1.2	3 3 3 4	6	NA		Gray-brown Silty CLAY, trace Organics (Roots), trace very fine Sand, moderately soft, moist. Dark gray-brown 4.8' - 5.0' bgs.	
					2 2 2 7	4	NA		Dark gray-black Silty CLAY, trace Organics (Roots), trace fine SAND, moist. Dark Gray-brown fine SAND, little Silt, moist. Saturated at 6.5' bgs.	
700		2	6-8	1.6					Light gray-brown fine SAND grading with little medium to coarse SAND, little fine to medium Gravel at 7.4' bgs, trace Silt, trace shells, saturated.	
		3	8-10	1.3	2 3 3 8	6	NA		Light gray-brown fine to coarse SAND and fine to coarse GRAVEL, trace Silt, trace shells, calcareous deposits on Gravel, moderately loose, saturated. Light gray-brown calcareous fine SAND, little Silt, trace shells, trace medium to coarse Sand, loose, saturated.	
10		4	10-12	1.0	7 8 10 26	18	NA		Light gray-brown calcareous fine to coarse SAND and fine to coarse GRAVEL, trace Silt, moderately dense, saturated. Calcareous deposits prevalent on Gravel.	
695										
15										



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929

Date Start/Finish: 3/10/09 and 3/12/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" and 12.25" ID
Rig Type: CME-55
Sampling Method: 3" x 2' Split Spoon

Northing: 350171.4
Easting: 12772825.2
Casing Elevation: 711.9
Borehole Depth: 16' bgs
Surface Elevation: 708.9 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-08
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
710										
0		NA	NA	NA	NA	NA	NA		No sample - continuous auger through 21AA stone pad.	
705		1	2-4	1.7	4 4 5 6	9	NA		Gray-brown Silty CLAY, trace Organics (Roots), trace intermittent fine Sand laminations, moderately soft, moist. Possible Sand contact at 3.7' bgs.	
5		2	4-6	0.8	2 2 2 2	4	NA		Dark gray-black Silty CLAY, trace organics (Roots, veg), moderately soft, moist.	
		3	6-8	0.5	2 2 2 2	4	NA		Gray-brown Silty CLAY, trace medium to coarse Sand, trace Organics, soft, moist.	
700		4	8-10	0.2	WOH 2 3 3	5	NA		Dark gray-brown Silty CLAY, trace fine to coarse Sand, soft, moist.	
10									Gray-brown fine SAND, little Silt, moist.	
		5	10-12	1.2	3 7 9 22	16	NA		Gray-brown fine SAND, little Silt, trace Organics (wood, shells), moist.	
									Gray-brown fine to coarse SAND and fine to coarse GRAVEL, trace Silt, calcareous deposition on Gravel, moderately dense, saturated.	
		6	12-14	0.4	8 49 50/0.2	NA	NA		Gray COBBLE, some fine to coarse Sand and fine to coarse Gravel, saturated.	
695										
15		7	14-16	0.8	5 7 9 10	16	NA		Gray-brown fine GRAVEL, little medium to coarse Gravel, little fine to coarse Sand, trace Silt, moderately dense, saturated.	



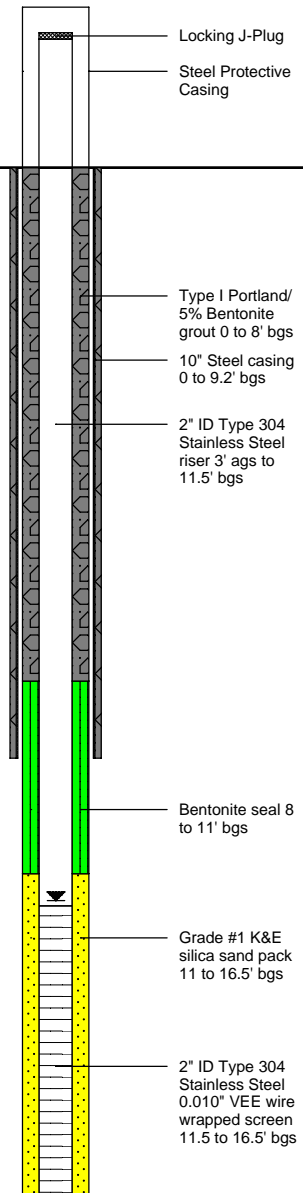
Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; WOH = weight of hammer.

Horizontal Datum: NAD 83, Michigan South Zone
 Vertical Datum: NGVD 1929

Date Start/Finish: 11/17/08, 3/4/09 and 3/11/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: CME-55
Sampling Method: 2" x 2' Split Spoon

Northing: 350900.5
Easting: 12773169.1
Casing Elevation: 717.1
Borehole Depth: 26' bgs
Surface Elevation: 714.3 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-09
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
715										 <p>Locking J-Plug</p> <p>Steel Protective Casing</p> <p>Type I Portland/ 5% Bentonite grout 0 to 8' bgs</p> <p>10" Steel casing 0 to 9.2' bgs</p> <p>2" ID Type 304 Stainless Steel riser 3' ags to 11.5' bgs</p> <p>Bentonite seal 8 to 11' bgs</p> <p>Grade #1 K&E silica sand pack 11 to 16.5' bgs</p> <p>2" ID Type 304 Stainless Steel 0.010" VEE wire wrapped screen 11.5 to 16.5' bgs</p>
0		1	0-2	0.6	2 2 2 3	4	NA		Brown Sandy Organic SILT, trace Organics (Roots, Wood), tree Root in tip of sample, damp.	
		2	2-4	1.0	2 2 2 2	4	NA		Dark orange-brown fine SAND, trace medium to coarse Sand, trace fine Gravel, trace Silt, damp.	
710		3	4-6	0.6	2 3 3 4	6	NA			
		4	6-8	1.2	6 11 18	17	NA		Gray-brown fine to medium SAND, little coarse Sand, little fine to medium Gravel, trace Silt, damp.	
		5	8-10	1.2	10 20 12 9	32	NA		As above, moist to wet at bottom of sample.	
705		6	10-12	1.3	5 3 3 5	6	NA		Orange-brown fine SAND, trace Silt, saturated.	
		7	12-14	1.0	4 5 7 12	12	NA		Orange-brown fine to coarse SAND, little fine to medium Gravel, trace Silt, saturated.	
700		8	14-16	1.3	16 12 7 5	19	NA		Gray-brown fine to medium SAND, little coarse Sand, trace fine Gravel, trace Silt, saturated.	

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/17/08. Well installed 3/4/09 and 3/11/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929





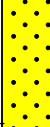
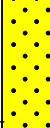
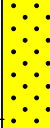
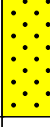
Client: Kalamazoo River Study Group

Well/Boring ID: MW-09

Site Location:

Borehole Depth: 26' bgs

Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	0.7	13 12 7 7	19	NA		Gray-brown fine to medium SAND, little coarse Sand, trace fine Gravel, trace Silt, saturated.	
695		10	18-20	1.7	6 6 3 3	9	NA		Gray-brown coarse SAND and fine GRAVEL, trace fine to medium Sand, saturated.	
20		11	20-22	1.7	2 3 6 7	9	NA		Gray-brown fine to medium SAND, little coarse Sand, trace fine to medium Gravel, loose, saturated.	
		12	22-24	1.7	4 4 4 7	8	NA			
690		13	24-26	1.2	2 2 2 4	4	NA			
25										
685										
30										
680										
35										



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/17/08. Well installed 3/4/09 and 3/11/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929

Date Start/Finish: 11/11/2008, 3/3/09 and 3/17/09
Drilling Company: MATECO
Driller's Name: Gary Swift, John Olson
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: CME-55
Sampling Method: 2" x 2' Split Spoon

Northing: 350303.0
Easting: 12774070.0
Casing Elevation: 712.7
Borehole Depth: 16' bgs
Surface Elevation: 709.7 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-10
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
710										
0		1	0-2	1.3	2 3 4 4	7	NA		Dark brown Organic SILT, trace fine Sand, trace Organics, damp. Orange-brown fine to medium SAND, little coarse Sand, trace fine to medium Gravel, trace Silt, loose, damp.	
		2	2-4	1.0	1 1/12"	1	NA		Gray-brown grading to dark gray Silty CLAY, trace Organics (highly degraded), damp.	
705		3	4-6	1.0	2 1 1 1	2	NA		Dark gray-brown fine SAND, trace to little Silt, trace Shells, saturated.	
		4	6-8	1.1	NA	NA	NA		Light gray-brown Silty fine to medium GRAVEL, little fine to coarse Sand, loose, saturated. Light gray calcareous discoloration throughout.	
		5	8-10	0.4	7 5 13 8	18	NA		As above, poor recovery due to coarse Gravel in tip of shoe.	
700		6	10-12	0.8	7 4 4 7	8	NA		Light gray-brown fine to medium GRAVEL, little fine to coarse Sand, trace Silt, saturated. Light gray calcareous Silt throughout.	
		7	12-14	0.9	4 5 7 9	12	NA		Dark gray-brown fine to coarse SAND, little fine to medium Gravel, trace Silt, loose, saturated.	
695		8	14-16	0.7	3 4 4 6	8	NA			

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/11/08. Well installed 3/3/09 and 3/17/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929



Date Start/Finish: 11/11/08, 3/3/09 and 3/17/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: CME-55
Sampling Method: 2" x 2' Split Spoon

Northing: 350789.2
Easting: 12774553.7
Casing Elevation: 712.4
Borehole Depth: 14' bgs
Surface Elevation: 709.7 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-11
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
710										
0		1	0-2	1.3	2 3 5 9	8	NA		Dark brown Organic SILT, trace Organics, damp. Gray Silty CLAY, moist. Brown fine to medium SAND, trace Shells, loose, moist.	
		2	2-4	1.6	2 2 2 2	4	NA		Gray Silty CLAY, trace Organics, damp. Light brown fine SAND, trace Silt, moist. Dark gray Silty CLAY, trace highly degraded Organics, odor, moist.	
705		3	4-6	0.7	1 1 1 1	2	NA		Gray-brown fine to medium SAND, trace coarse Sand, trace Silt, trace Shells, saturated. As above, Little Silt.	
		4	6-8	0.5	1 1 1 1	2	NA		Gray-brown fine to medium SAND, trace coarse Sand, trace fine to medium Gravel, trace light gray Silt in tip of sampler, trace Shells, loose, saturated.	
700		5	8-10	0.6	3 3 4 6	7	NA		Dark gray-brown fine to coarse SAND, little fine Gravel, loose, saturated. Gray-brown fine to coarse SAND, trace fine to medium Gravel, trace Silt, loose, saturated.	
		6	10-12	1.0	7 4 7 6	11	NA		Dark gray-brown fine to coarse SAND, little fine Gravel, loose, saturated. Gray-brown fine to coarse SAND, trace fine to medium Gravel, trace Silt, loose, saturated.	
		7	12-14	0.7	3 3 3 3	6	NA		Dark gray-brown fine to coarse SAND, little fine Gravel, loose, saturated. Gray-brown fine to coarse SAND, trace fine to medium Gravel, trace Silt, loose, saturated.	
695										

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/11/08. Well installed 3/3/09 and 3/17/09.



Date Start/Finish: 11/10/08, 3/16/09 and 3/18/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" and 12.25" ID
Rig Type: CME-55
Sampling Method: 3" x 2' Split Spoon

Northing: 350726.9
Easting: 12775210.9
Casing Elevation: 715.4

Borehole Depth: 11' bgs
Surface Elevation: 712.4 ft AMSL

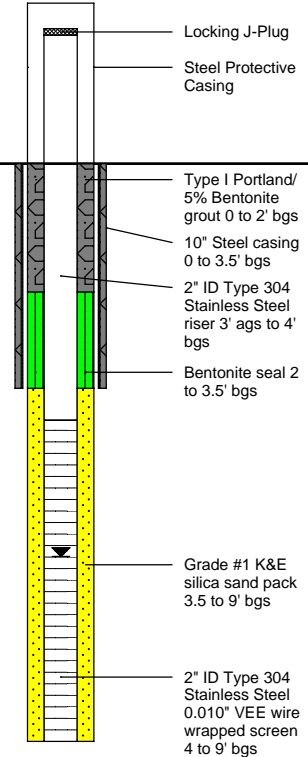
Descriptions By: Ron Kuhn

Well/Boring ID: MW-12

Client: Kalamazoo River Study Group

Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
715										
0									No sample - continuous auger through 21AA stone pad.	
710		1	0-3	NA	NA	NA	NA			
		2	3-5	0.3	4 6 10 6	16	NA		Gray-brown fine to medium SAND, trace coarse Sand, trace fine Gravel, trace Silt, saturated.	
5		3	5-7	1.1	2 2 2 7	4	NA		Gray-brown grading to dark gray-brown fine to medium SAND, trace coarse Sand, trace fine to medium Gravel, trace Silt, loose, saturated.	
705		4	7-9	0.7	3 4 1 6	5	NA		Dark gray-brown fine SAND, trace medium to coarse Sand, trace Silt, trace shells, loose, saturated.	
		5	9-11	1.2	21 21 20 13	41	NA		Light gray calcareous fine SAND, little Silt, trace medium to coarse Sand, trace fine Gravel, saturated.	
10									Olive-brown fine to coarse SAND and fine to coarse GRAVEL, trace Silt, dense, saturated.	
700										
15										



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/10/08. Well installed 3/16/09 and 3/18/09.

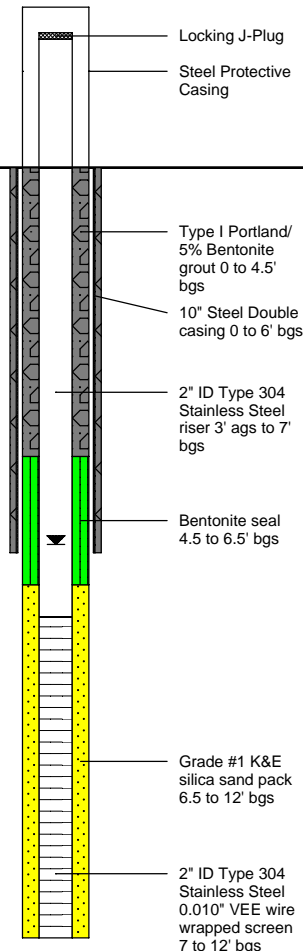
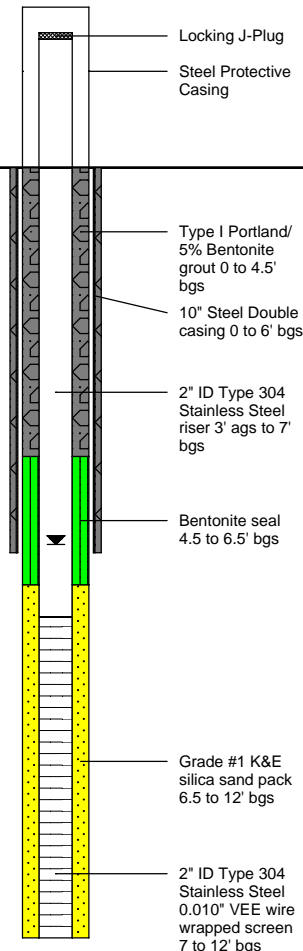
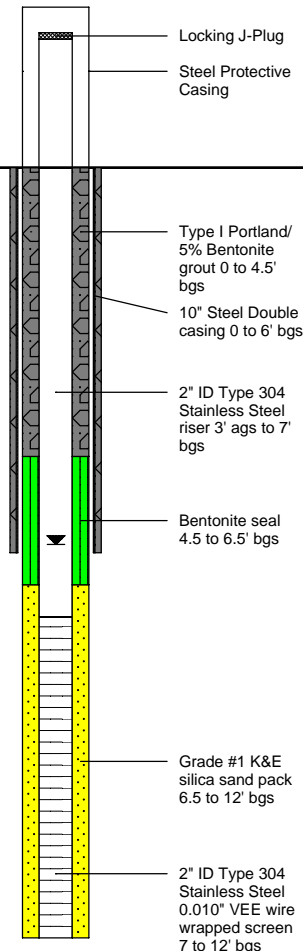
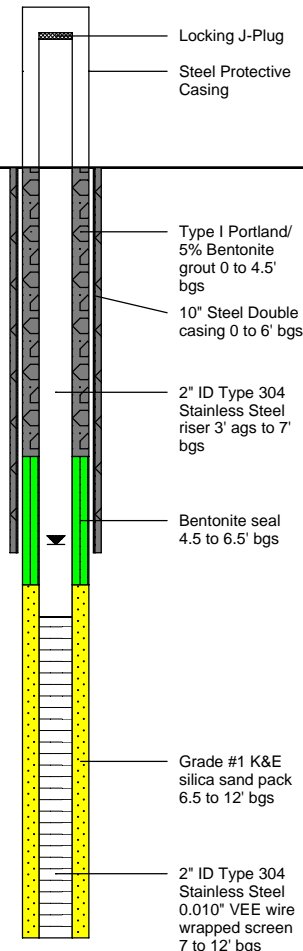
Horizontal Datum: NAD 83, Michigan South Zone
 Vertical Datum: NGVD 1929



Date Start/Finish: 11/11/08, 3/2/2009 and 3/17/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" and 12.25" ID
Rig Type: CME-55
Sampling Method: 2" x 2' Split Spoon

Northing: 350420.2
Easting: 12774429.7
Casing Elevation: 714.4
Borehole Depth: 18' bgs
Surface Elevation: 711.3 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-13
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	710	1	0-2	1.4	2	3	NA		Dark brown Organic SILT, trace Organics, damp.	 <p>Locking J-Plug</p> <p>Steel Protective Casing</p> <p>Type I Portland/ 5% Bentonite grout 0 to 4.5' bgs</p> <p>10" Steel Double casing 0 to 6' bgs</p> <p>2" ID Type 304 Stainless Steel riser 3' ags to 7' bgs</p> <p>Bentonite seal 4.5 to 6.5' bgs</p> <p>Grade #1 K&E silica sand pack 6.5 to 12' bgs</p> <p>2" ID Type 304 Stainless Steel 0.010" VEE wire wrapped screen 7 to 12' bgs</p>
					2				Orange-brown fine to medium SAND, little coarse Sand, trace fine Gravel, loose, damp.	
					1				Gray-brown Clayey SILT, trace fine Sand, damp.	
					2				Gray-brown fine SAND, trace Silt, damp.	
		2	2-4	0.4	2	4	NA		Olive-brown Silty CLAY, trace highly degraded natural Organics, moist.	
					2					
					2					
					1				As above, grading to dark gray-brown in color at 4.5' bgs, gray-brown fine to medium Sand seam at 4.5' bgs, moist.	
-5		3	4-6	0.7	1	2	NA			
					1					
	705				1				Gray-brown fine to medium GRAVEL, little fine to coarse Sand, trace light gray (calcareous) Silt throughout, loose, saturated.	 <p>Locking J-Plug</p> <p>Steel Protective Casing</p> <p>Type I Portland/ 5% Bentonite grout 0 to 4.5' bgs</p> <p>10" Steel Double casing 0 to 6' bgs</p> <p>2" ID Type 304 Stainless Steel riser 3' ags to 7' bgs</p> <p>Bentonite seal 4.5 to 6.5' bgs</p> <p>Grade #1 K&E silica sand pack 6.5 to 12' bgs</p> <p>2" ID Type 304 Stainless Steel 0.010" VEE wire wrapped screen 7 to 12' bgs</p>
		4	6-8	0.6	1	5	NA			
					4					
		5	8-10	0.6	4	11	NA			
					7					
					9				As above, trace light gray Silt discoloration, gray calcareous deposits on gravel.	
-10		6	10-12	0.7	7	23	NA			
	700				9					
					14					
					15					
					5				GRAVEL in tip of shoe.	 <p>Locking J-Plug</p> <p>Steel Protective Casing</p> <p>Type I Portland/ 5% Bentonite grout 0 to 4.5' bgs</p> <p>10" Steel Double casing 0 to 6' bgs</p> <p>2" ID Type 304 Stainless Steel riser 3' ags to 7' bgs</p> <p>Bentonite seal 4.5 to 6.5' bgs</p> <p>Grade #1 K&E silica sand pack 6.5 to 12' bgs</p> <p>2" ID Type 304 Stainless Steel 0.010" VEE wire wrapped screen 7 to 12' bgs</p>
		7	12-14	0.2	6	14	NA			
					8					
					10					
-15		8	14-16	0.9	3	10	NA		Gray-brown fine to coarse SAND, little fine to medium Gravel, trace Silt, loose, saturated.	 <p>Locking J-Plug</p> <p>Steel Protective Casing</p> <p>Type I Portland/ 5% Bentonite grout 0 to 4.5' bgs</p> <p>10" Steel Double casing 0 to 6' bgs</p> <p>2" ID Type 304 Stainless Steel riser 3' ags to 7' bgs</p> <p>Bentonite seal 4.5 to 6.5' bgs</p> <p>Grade #1 K&E silica sand pack 6.5 to 12' bgs</p> <p>2" ID Type 304 Stainless Steel 0.010" VEE wire wrapped screen 7 to 12' bgs</p>
					4					
					6					
					6					

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/11/08. Well installed 3/2/09 and 3/17/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929




Client: Kalamazoo River Study Group

Well/Boring ID: MW-13

Site Location:
Plainwell, Michigan

Borehole Depth: 18' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
695		9	16-18	0.5	4 7 3 5	10	NA		Gray-brown fine to medium GRAVEL, little fine to coarse Sand, trace Silt, loose, saturated.	
20										
690										
25										
685										
30										
680										
35										



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/11/08. Well installed 3/2/09 and 3/17/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929

Date Start/Finish: 11/10/2008, 3/3/09 and 3/16/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: CME-55
Sampling Method: 2" x 2' Split Spoon

Northing: 350664.3
Easting: 12774948.4
Casing Elevation: 712.5
Borehole Depth: 16' bgs
Surface Elevation: 709.5 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-14
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
710										
0		1	0-2	1.7	2 2 2 2	4	NA		Dark brown SILT, trace fine Sand, trace Organics (Roots), damp. Brown fine to medium SAND, trace Silt, loose, damp. Light gray Clayey SILT, damp. Dark brown Organic SILT, trace Organics (Roots), damp.	
		2	2-4	1.3	1 1 1	2	NA		Dark brown Silty fine SAND, trace Organics (highly degraded), moist to wet. at 2": Wet. Gray-brown fine SAND, trace medium to coarse Sand, trace Silt, wet.	
705		3	4-6	1.6	1 1 2	2	NA		Brown SILT, trace fine Sand, wet.	
		4	6-8	1.0	4 4 4 4	8	NA		Light gray-brown fine SAND, little Silt, trace medium to coarse Sand, trace fine to medium Gravel, saturated. (Light gray SILT in Sand/Gravel matrix).	
									Gray-brown fine to coarse SAND, trace fine to medium Gravel, trace Silt, saturated.	
		5	8-10	1.0	NA	NA	NA		As above, grading to dark gray at 8.7' bgs.	
700		6	10-12	0.9	2 3 3 4	6	NA		Dark gray fine to medium GRAVEL, little fine to coarse Sand, trace Silt, saturated.	
		7	12-14	1.0	2 3 3 4	6	NA			
695		8	14-16	0.7	3 3 3 5	6	NA			

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/10/08. Well installed 3/3/09 and 3/16/09.

Horizontal Datum: NAD 83, Michigan South Zone
 Vertical Datum: NGVD 1929



Date Start/Finish: 11/11/08, 3/2/2009 and 3/17/09
Drilling Company: MATECO
Driller's Name: Gary Swift, Jack Sanders
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" and 12.25" ID
Rig Type: CME-55
Sampling Method: 2" x 2' Split Spoon

Northing: 350413.0
Easting: 12774893.2
Casing Elevation: 713.8
Borehole Depth: 18' bgs
Surface Elevation: 710.8 ft AMSL
Descriptions By: Ron Kuhn

Well/Boring ID: MW-15
Client: Kalamazoo River Study Group
Location: Plainwell, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
										<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><d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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/11/08. Well installed 3/2/09 and 3/17/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929

Client: Kalamazoo River Study Group

Well/Boring ID: MW-15

Site Location:

Plainwell, Michigan

Borehole Depth: 18' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	0.0	3 3 3 4	6	NA		No recovery - slough.	
20	690									
25	685									
30	680									
35	675									



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Lithologic descriptions from pilot boring drilled on 11/11/08. Well installed 3/2/09 and 3/17/09.

Horizontal Datum: NAD 83, Michigan South Zone
Vertical Datum: NGVD 1929

Attachment 3

Groundwater and Surface Water
Sampling Logs

Attachment 3A

Groundwater and Surface Water
Sampling Logs – Quarter 1 - April
2009

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. Kohnen
Client / Job Number: B0064537.0000 Task 00500
Weather: 60°F, Clear, LT WMP.

Well ID: MW-1
Date: 4/16/09
Time In: 1215 Time Out: 1455

Well Information

Depth to Water: (feet) 6.80 (TIC)
Total Depth: (feet) 12.73 (TIC)
Length of Water Column: (feet) 5.93
Volume of Water in Well: (gal) 0.97
Three Well Volumes: (gal) 2.91

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Pump on @ 1230 OFF @ 1435

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 125
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50
Rate (ml/min)	100	100	100	100	100	100	100	100	100	100	100	100
Depth to Water (ft.)	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82	6.82
pH	7.21	7.23	7.24	7.23	7.24	7.25	7.24	7.24	7.25	7.25	7.25	7.25
Temp. (C)	10.60	10.64	10.66	10.73	10.70	10.84	11.05	10.89	10.76	10.89	10.91	10.94
Conductivity (mS/cm)	0.957	0.959	0.959	0.968	0.960	0.961	0.960	0.961	0.962	0.963	0.963	0.964
Dissolved Oxygen	0.96	0.57	0.46	0.39	0.33	0.29	0.30	0.31	0.27	0.25	0.22	0.22
ORP (mV)	-109.4	-113.7	-115.7	-117.8	-118.7	-121.1	-121.1	-120.9	-121.2	-120.6	-120.6	-122.9
Turbidity (NTU)	13.5	12.9	11.5	11.9	10.2	9.19	8.60	6.50	5.77	5.66	4.79	4.48
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, no odor.

Final Purge: Clear, no odor.

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Yes Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	4	Chloride, Sulfate, & Alkalinity (250 ml)	2
TSS (1 L Poly)	2	Total Metals (250 ml with HNO ₃)	2
PCBs (Total) (Amber)	4	TDS (250 ml)	2
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40014</u>		Sample Time: <u>1340</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duplicate ID: <u>TS40015</u>		Dup. Time:	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. Kohnen

Well ID: MW-1

Client / Job Number: B0064537.0000 Task 00500

Date: 4/16/09

Weather: 60°F, Clear, LT Wind

Time In: 1215

Time Out:

Well Information

Depth to Water: (feet) (TIC)
Total Depth: (feet) (TIC)
Length of Water Column: (feet)
Volume of Water in Well: (gal)
Three Well Volumes: (gal)

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☐ No ☐
Measuring Point Marked: Yes ☐ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☐ Other:
Sampling Method: Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Duration of Pumping: (min)
Average Pumping Rate: (ml/min) Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) Did well go dry: Yes ☐ No ☐

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	7.00											
Rate (mL/min)	100											
Depth to Water (ft.)	6.82											
pH	7.26											
Temp. (C)	10.88											
Conductivity (mS/cm)	0.965											
Dissolved Oxygen	0.22											
ORP (mV)	-123.3											
Turbidity (NTU)	4.06											
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge:

Final Purge:

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover):

Locking Protective Well Cap/expansion plug:

Well Lock Present? Lock Condition:

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)		Chloride, Sulfate, & Alkalinity. (250 ml)	
TSS (1 L Poly)		Total Metals (250 ml with HNO ₃)	
PCBs (Total) (Amber)		TDS (250 ml)	
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID:		Sample Time:	
MS/MSD:	Yes No	Duplicate:	Yes No
Duplicate ID:		Dup. Time:	
Sampled By:		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. Kossow

Well ID: MW-3

Client / Job Number: B0064537.0000 Task 00500

Date: 4/15/09

Weather: 50°F, CLEAR, MOD WIND

Time In: 1215

Time Out: 1410

Well Information

Depth to Water:	(feet)	<u>8.83</u>	(TIC)
Total Depth:	(feet)	<u>13.75</u>	(TIC)
Length of Water Column:	(feet)	<u>4.92</u>	
Volume of Water in Well:	(gal)	<u>0.802</u>	
Three Well Volumes:	(gal)	<u>2.41</u>	

Well Type:	Flushmount <input type="checkbox"/>	Stick-Up <input checked="" type="checkbox"/>	
Well Material:	Stainless Steel <input checked="" type="checkbox"/>	PVC <input type="checkbox"/>	
Well Locked:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Measuring Point Marked:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Well Diameter:	1" <input type="checkbox"/>	2" <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>

Purging Information Pump on @ 1230 OFF @ 1355

Purging Method:	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Tubing Material:	Silicone <input type="checkbox"/>	Polyethylene <input type="checkbox"/>	Teflon <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>
Sampling Method:	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Duration of Pumping:	(min)	<u>85</u>		
Average Pumping Rate:	(ml/min)	<u>100</u>	Water-Quality Meter Type:	<u>YSI-556 & Hach 2100P</u>
Total Volume Removed:	(gal)	<u>2.25</u>	Did well go dry:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	<u>1.00</u>	<u>1.50</u>	<u>2.00</u>	<u>2.50</u>	<u>3.00</u>	<u>3.50</u>	<u>4.00</u>	<u>4.50</u>	<u>5.00</u>	<u>5.50</u>		
Rate (mL/min)	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>		
Depth to Water (ft.)	<u>8.86</u>	<u>8.86</u>	<u>8.86</u>	<u>8.86</u>	<u>8.86</u>	<u>8.86</u>	<u>8.86</u>	<u>8.86</u>	<u>8.86</u>	<u>8.86</u>		
pH	<u>7.23</u>	<u>7.18</u>	<u>7.13</u>	<u>7.10</u>	<u>7.09</u>	<u>7.12</u>	<u>7.16</u>	<u>7.12</u>	<u>7.08</u>	<u>7.08</u>		
Temp. (C)	<u>10.66</u>	<u>10.57</u>	<u>10.67</u>	<u>10.87</u>	<u>10.82</u>	<u>10.77</u>	<u>10.72</u>	<u>10.70</u>	<u>10.77</u>	<u>10.87</u>		
Conductivity (mS/cm)	<u>1.096</u>	<u>1.084</u>	<u>1.073</u>	<u>1.067</u>	<u>1.064</u>	<u>1.059</u>	<u>1.055</u>	<u>1.052</u>	<u>1.043</u>	<u>1.039</u>		
Dissolved Oxygen	<u>0.41</u>	<u>0.37</u>	<u>0.43</u>	<u>0.36</u>	<u>0.29</u>	<u>0.26</u>	<u>0.24</u>	<u>0.26</u>	<u>0.25</u>	<u>0.24</u>		
ORP (mV)	<u>-88.1</u>	<u>-86.0</u>	<u>-86.2</u>	<u>-89.8</u>	<u>-90.1</u>	<u>-88.3</u>	<u>-88.3</u>	<u>-90.1</u>	<u>-91.2</u>	<u>-90.4</u>		
Turbidity (NTU)	<u>30.8</u>	<u>20.2</u>	<u>16.6</u>	<u>14.3</u>	<u>10.8</u>	<u>7.82</u>	<u>5.49</u>	<u>4.80</u>	<u>4.14</u>	<u>3.97</u>		
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: SLT CLOUDY, NO ODOR

Final Purge: CLEAR, NO ODOR

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Yes Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	<u>2</u>	Chloride, Sulfate, & Alkalinity (250 ml)	<u>1</u>
TSS (1 L Poly)	<u>1</u>	Total Metals (250 ml with HNO ₃)	<u>1</u>
PCBs (Total) (Amber)	<u>2</u>	TDS (250 ml)	<u>1</u>
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID:	<u>TS40010</u>	Sample Time:	<u>1325</u>
MS/MSD:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Duplicate:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Duplicate ID:	<u>N/A</u>	Dup. Time:	<u>N/A</u>
Sampled By:	<u>MEK</u>	Log Reviewed By:	<u>MEK</u>
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: A. O'Neil
Client / Job Number: B0064537.0000 Task 00500
Weather: 50° overcast

Well ID: MW-4
Date: 4-15-09
Time In: 0945 Time Out: 1105

Well Information

Depth to Water: (feet) 10.25 (TIC)
Total Depth: (feet) 14.46 (TIC)
Length of Water Column: (feet) 4.21
Volume of Water in Well: (gal) .68
Three Well Volumes: (gal) 2.05

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other: ☐

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other: ☐
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Duration of Pumping: (min) 65
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.71 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

	1	2	3	4	5	6	7	8	9	10	11	12
Time:	1005	1010	1015	1020	1025	1030						
Volume Purged (L)	1	1.5	2	2.5	3	3.5						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	10.26	10.26	10.26	10.26	10.26	10.26						
pH	7.25	7.25	7.25	7.22	7.19	7.19						
Temp. (C)	9.34	9.34	9.38	9.47	9.52	9.52						
Conductivity (mS/cm)	1.078	1.060	1.043	1.034	1.032	1.031						
Dissolved Oxygen (mg/l)	.47	.38	.38	.36	.44	.39						
ORP (mV)	-104.1	-97.5	-101.8	-100.5	-97.7	-101.2						
Turbidity (NTU)	6.90	4.81	2.52	1.63	1.43	1.19						
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear / no odor

Final Purge: clear / no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other: ☐

OVERSIGHT SAMPLE ID:

TIME:

Pump on 0955
Pump off 1100

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40007</u>		Sample Time: <u>1030</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>—</u>		Dup. Time: <u>—</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By: <u>—</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. KONAGER Well ID: MW-5
Client / Job Number: B0064537.0000 Task 00500 Date: 4/15/09
Weather: 40°S, OVERCAST, MOD WIND. Time In: 0943 Time Out: 1120

Well Information

Depth to Water: (feet) 10.13 (TIC)
Total Depth: (feet) 14.23 (TIC)
Length of Water Column: (feet) 4.10
Volume of Water in Well: (gal) 0.67
Three Well Volumes: (gal) 2.00

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

PUMP on 0955 OFF @ 1110

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 75
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.98 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50				
Rate (mL/min)	100	100	100	100	100	100	100	100				
Depth to Water (ft.)	10.14	10.14	10.14	10.14	10.14	10.14	10.14	10.14				
pH	6.82	6.93	7.05	7.14	7.19	7.24	7.25	7.26				
Temp. (C)	9.21	9.22	9.27	9.34	9.44	9.64	9.65	9.85				
Conductivity (mS/cm)	1.003	1.000	1.000	1.001	1.001	1.000	1.001	0.999				
Dissolved Oxygen	0.58	0.48	0.57	0.46	0.38	0.31	0.32	0.29				
ORP (mV)	-723	-79.8	-86.5	-93.9	-98.7	-104.6	-105.9	-107.3				
Turbidity (NTU)	10.1	5.36	2.73	2.56	2.32	1.53	1.43	1.76				
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: CLEAR, NO ODOR.

Final Purge: CLEAR, NO ODOR.

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Yes Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40008</u>		Sample Time: <u>1040</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MEK</u>		Log Reviewed By: <u>MEK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group - Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: A. O'Neil
Client / Job Number: B0064537.0000 Task 00500
Weather: 53° clear

Well ID: MW-6
Date: 4-16-09
Time In: 1000 Time Out: 1230

Well Information

Depth to Water: (feet) 9.91 (TIC)
Total Depth: (feet) 15.89 (TIC)
Length of Water Column: (feet) 5.98
Volume of Water in Well: (gal) .97
Three Well Volumes: (gal) 2.92

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other: ☐

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other: ☐
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Duration of Pumping: (min) 135
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 3.56 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5		
Rate (mL/min)	100	100	100	100	100	100	100	100	100	100		
Depth to Water (ft.)	9.93	9.93	9.93	9.93	9.93	9.93	9.93	9.93	9.93	9.93		
pH	7.13	7.18	7.17	7.17	7.16	7.17	7.19	7.17	7.19	7.17		
Temp. (C)	10.52	10.45	10.56	10.61	10.65	10.73	10.77	10.79	10.82	10.89		
Conductivity (mS/cm)	1.004	.990	.982	.979	.975	.974	.973	.972	.971	.970		
Dissolved Oxygen	.39	.30	.31	.34	.28	.24	.22	.23	.18	.21		
ORP (mV)	-24.6	-25.8	-98.8	-102.6	-96.8	-89.4	-85.5	-92.9	-102.7	-100.7		
Turbidity (NTU)	20.2	14.12	8.22	7.16	5.06	4.25	3.47	2.98	2.35	1.84		
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear w/orange flocculants/no odor

Final Purge: clear/no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other: ☐

OVERSIGHT SAMPLE ID:

Pump on 1005
Pump off 1220

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	6	Chloride, Sulfate, & Alkalinity (250 ml)	3
TSS (1 L Poly)	3	Total Metals (250 ml with HNO ₃)	3
PCBs (Total) (Amber)	6	TDS (250 ml)	3
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40013</u>		Sample Time: <u>1100</u>	
MS/MSD: <u>yes</u> No <input type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input type="checkbox"/>	
Duplicate ID: <u>—</u>		Dup. Time: <u>—</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By: <u>—</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: A.O'Neil

Well ID: MW-7

Client / Job Number: B0064537.0000 Task 00500

Date: 4-15-09

Weather: 62° clear

Time In: 1225 Time Out: 1415

Well Information

Depth to Water: (feet) 10.30 (TIC)
Total Depth: (feet) 14.70 (TIC)
Length of Water Column: (feet) 4.4
Volume of Water in Well: (gal) .71
Three Well Volumes: (gal) 2.15

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other: ☐

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other: ☐
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Duration of Pumping: (min) 95
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.50 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	
Rate (mL/min)	100	100	100	100	100	100	100	100	100	100	100	
Depth to Water (ft.)	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	10.32	
pH	7.06	7.07	7.12	7.18	7.17	7.17	7.17	7.23	7.25	7.26	7.28	
Temp. (C)	10.11	10.38	10.75	10.85	10.57	10.47	10.49	10.42	10.52	10.47	10.47	
Conductivity (mS/cm)	1.258	1.264	1.254	1.238	1.226	1.193	1.174	1.161	1.144	1.140	1.137	
Dissolved Oxygen	.48	.19	.18	.23	.20	.16	.12	.10	.07	.07	.06	
ORP (mV)	-31.9	-38.4	-57.3	-69.3	-75.3	-75.7	-78.4	-83.8	-87.7	-88.3	-88.3	
Turbidity (NTU)	57.0	39.7	23.2	15.2	9.44	6.81	4.74	3.62	2.75	1.94	1.22	
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear / no odor

Final Purge: clear / no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

TIME:

Pump on 1235
Pump off 1410

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: TS40011		Sample Time: 1335	
MS/MSD: Yes <input checked="" type="radio"/> No <input type="radio"/>		Duplicate: Yes <input checked="" type="radio"/> No <input type="radio"/>	
Duplicate ID: _____		Dup. Time: _____	
Sampled By: A.O'Neil		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: A. O'Neil
Client / Job Number: B0064537.0000 Task 00500
Weather: 55° partly cloudy

Well ID: MW-8
Date: 4-15-09
Time In: 1110 Time Out: 1220

Well Information

Depth to Water: (feet) 8.84 (TIC)
Total Depth: (feet) 18.53 (TIC)
Length of Water Column: (feet) 9.69
Volume of Water in Well: (gal) 1.57
Three Well Volumes: (gal) 4.73

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other: ☐

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other: ☐
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Duration of Pumping: (min) 65
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.71 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	8.85	8.86	8.86	8.86	8.86	8.86						
pH	7.18	7.21	7.21	7.21	7.20	7.20						
Temp. (C)	11.90	11.88	11.88	11.72	11.99	12.32						
Conductivity (mS/cm)	.995	.996	.995	.995	.993	.992						
Dissolved Oxygen $\frac{mg}{L}$.75	.45	.28	.23	.21	.19						
ORP (mV)	-90.8	-92.7	-95.8	-97.2	-98.0	-96.4						
Turbidity (NTU)	9.11	8.51	7.43	4.98	4.14	3.20						
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear/no odor

Final Purge: clear/no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

TIME:

Pump on 1115
Pump off 1220

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40009</u>		Sample Time: <u>1150</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>-</u>		Dup. Time: <u>-</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By: <u></u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel:

Client / Job Number: B0064537.0000 Task 00500

Well ID: MW-9

Date: 4-17-09

Weather: 62° Clear

Time In: 1025 Time Out: 1155

Well Information

Depth to Water: (feet) 13.81 (TIC)
Total Depth: (feet) 19.49 (TIC)
Length of Water Column: (feet) 5.68
Volume of Water in Well: (gal) 9.25
Three Well Volumes: (gal) 2.77

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 75
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.98 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5	4	4.5				
Rate (mL/min)	100	100	100	100	100	100	100	100				
Depth to Water (ft.)	13.83	13.83	13.83	13.83	13.83	13.83	13.83	13.83				
pH	7.14	7.22	7.27	7.30	7.32	7.28	7.28	7.27				
Temp. (C)	10.08	10.28	10.35	10.26	10.14	10.31	10.32	10.25				
Conductivity (mS/cm)	.820	.869	.877	.875	.875	.873	.875	.875				
Dissolved Oxygen	.69	.38	.32	.31	.33	.31	.30	.28				
ORP (mV)	-13.5	-40.9	-51.7	-55.9	-56.1	-50.9	-56.6	-64.6				
Turbidity (NTU)	9.13	9.12	7.91	6.02	5.02	4.41	3.36	2.99				
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear / no odor

Final Purge:

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

TIME:

Pump on 1030
Pump off 1145

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: TS40016		Sample Time: 1115	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: —		Dup. Time: —	
Sampled By: A. O'Neil		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group - Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: A. O'Neil
Client / Job Number: B0064537.0000 Task 00500
Weather: 35° rain

Well ID: MW-10
Date: 4-14-09
Time In: 1300 Time Out: 1435

Well Information

Depth to Water: (feet) 7.64 (TIC)
Total Depth: (feet) 12.45 (TIC)
Length of Water Column: (feet) 4.81
Volume of Water in Well: (gal) .78
Three Well Volumes: (gal) 2.35

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 85
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.24 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5	4	4.5				
Rate (mL/min)	100	100	100	100	100	100	100	100				
Depth to Water (ft.)	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65				
pH	7.14	7.13	7.13	7.13	7.13	7.12	7.13	7.13				
Temp. (C)	7.49	7.57	7.62	7.61	7.65	7.72	7.73	7.71				
Conductivity (mS/cm)	1.203	1.206	1.208	1.210	1.210	1.211	1.213	1.214				
Dissolved Oxygen mg/L	1.41	.93	.66	.57	.45	.36	.32	.30				
ORP (mV)	-77.4	-81.8	-81.9	-85.3	-81.0	-71.6	-72.1	-73.9				
Turbidity (NTU)	8.07	6.14	4.49	3.61	2.42	2.44	1.91	1.64				
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear/no odor

Final Purge:

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

TIME:

Pump on 1305
Pump off 1430

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H_2SO_4)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO_3)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40005</u>		Sample Time: <u>1350</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>-</u>		Dup. Time: <u>-</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: A. O'Neil

Well ID: MW-11

Client / Job Number: B0064537.0000 Task 00500

Date: 4-14-09

Weather: 38° rain

Time In: 1000

Time Out: 1200

Well Information

Depth to Water:	(feet)	<u>6.82</u>	(TIC)
Total Depth:	(feet)	<u>12.92</u>	(TIC)
Length of Water Column:	(feet)	<u>6.1</u>	
Volume of Water in Well:	(gal)	<u>994</u>	
Three Well Volumes:	(gal)	<u>2.98</u>	

Well Type:	Flushmount	<input type="checkbox"/>	Stick-Up	<input checked="" type="checkbox"/>
Well Material:	Stainless Steel	<input checked="" type="checkbox"/>	PVC	<input type="checkbox"/>
Well Locked:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Measuring Point Marked:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Well Diameter:	1"	<input type="checkbox"/>	2"	<input checked="" type="checkbox"/>
			Other:	

Purging Information

Purging Method: (Peristaltic Pump)	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Tubing Material:	Silicone <input type="checkbox"/>	Polyethylene <input type="checkbox"/>	Teflon <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>
Sampling Method:	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Duration of Pumping:	(min)	<u>105</u>		
Average Pumping Rate:	(ml/min)	<u>100</u>	Water-Quality Meter Type:	<u>YSI-556 & Hach 2100P</u>
Total Volume Removed:	(gal)	<u>2.77</u>	Did well go dry:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	<u>1</u>	<u>1.5</u>	<u>2</u>	<u>2.5</u>	<u>3</u>	<u>3.5</u>	<u>4</u>	<u>4.5</u>				
Rate (mL/min)	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>				
Depth to Water (ft.)	<u>6.84</u>	<u>6.84</u>	<u>6.84</u>	<u>6.84</u>	<u>6.84</u>	<u>6.84</u>	<u>6.84</u>	<u>6.84</u>				
pH	<u>7.35</u>	<u>7.32</u>	<u>7.33</u>	<u>7.33</u>	<u>7.33</u>	<u>7.33</u>	<u>7.34</u>	<u>7.33</u>				
Temp. (C)	<u>7.12</u>	<u>7.13</u>	<u>7.16</u>	<u>7.13</u>	<u>7.24</u>	<u>7.26</u>	<u>7.26</u>	<u>7.30</u>				
Conductivity (mS/cm)	<u>.995</u>	<u>.950</u>	<u>.936</u>	<u>.934</u>	<u>.931</u>	<u>.930</u>	<u>.929</u>	<u>.928</u>				
Dissolved Oxygen ^{mg/L}	<u>.99</u>	<u>.63</u>	<u>.42</u>	<u>.43</u>	<u>.39</u>	<u>.40</u>	<u>.36</u>	<u>.32</u>				
ORP (mV)	<u>-100.9</u>	<u>-112.6</u>	<u>-115.7</u>	<u>-96.1</u>	<u>-86.6</u>	<u>-108.9</u>	<u>-101.7</u>	<u>-99.2</u>				
Turbidity (NTU)	<u>17.5</u>	<u>12.21</u>	<u>8.44</u>	<u>6.16</u>	<u>5.44</u>	<u>4.28</u>	<u>3.04</u>	<u>1.97</u>				
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear w/ orange floaties no odor

Final Purge: clear, no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other: ☐

OVERSIGHT SAMPLE ID:

Pump on 1010
Pump off 1155

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	<u>2</u> <u>4</u>	Chloride, Sulfate, & Alkalinity. (250 ml)	<u>2</u>
TSS (1 L Poly)	<u>2</u>	Total Metals (250 ml with HNO ₃)	<u>2</u>
PCBs (Total) (Amber)	<u>2</u> <u>4</u>	TDS (250 ml)	<u>2</u>
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40002</u>		Sample Time: <u>1055</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duplicate ID: <u>TS40003</u>		Dup. Time: <u>1130</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By: <input type="checkbox"/>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group - Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: A. D'Neil Well ID: MW-11
Client / Job Number: B0064537.0000 Task 00500 Date: 4-14-09
Weather: 38° rain Time In: 1000 Time Out: 1200

Well Information
Depth to Water: (feet) 6.82 (TIC)
Total Depth: (feet) 12.92 (TIC)
Length of Water Column: (feet) 6.1
Volume of Water in Well: (gal) 994
Three Well Volumes: (gal) 2.98

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other: ☐

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other: ☐
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Duration of Pumping: (min) 105
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.77 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5	4	4.5				
Rate (mL/min)	100	100	100	100	100	100	100	100				
Depth to Water (ft.)	6.84	6.84	6.84	6.84	6.84	6.84	6.84	6.84				
pH	7.35	7.32	7.33	7.33	7.33	7.33	7.34	7.33				
Temp. (C)	7.12	7.13	7.16	7.13	7.24	7.26	7.26	7.30				
Conductivity (mS/cm)	.995	.950	.936	.934	.931	.930	.929	.928				
Dissolved Oxygen ^{mg/L}	.99	.63	.42	.43	.39	.40	.36	.32				
ORP (mV)	-100.9	-112.6	-115.7	-96.1	-86.6	-108.9	-101.7	-99.2				
Turbidity (NTU)	17.5	12.21	8.44	6.16	5.44	4.28	3.04	1.97				
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear w/ orange floaties no odor

Final Purge: clear, no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other: ☐

OVERSIGHT SAMPLE ID:

Pump on 1010
Pump off 1155

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	<u>2</u> <u>4</u>	Chloride, Sulfate, & Alkalinity (250 ml)	<u>2</u>
TSS (1 L Poly)	<u>2</u>	Total Metals (250 ml with HNO ₃)	<u>2</u>
PCBs (Total) (Amber)	<u>2</u> <u>4</u>	TDS (250 ml)	<u>2</u>
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40002</u>	Sample Time: <u>1055</u>		
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Duplicate: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Duplicate ID: <u>TS40003</u>	Dup. Time: <u>1130</u>		
Sampled By: <u>A. D'Neil</u>	Log Reviewed By: <input type="checkbox"/>		
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: A.O. Neil

Well ID: MW-12

Client / Job Number: B0064537.0000 Task 00500

Date: 4-13-09

Weather: 45° overcast

Time In: 1510 Time Out: 1650

Well Information

Depth to Water: (feet) 8.59 (TIC)
Total Depth: (feet) 12.00 (TIC)
Length of Water Column: (feet) 3.41
Volume of Water in Well: (gal) .55
Three Well Volumes: (gal) 1.6

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 85
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.24 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5	4					
Rate (mL/min)	100	100	100	100	100	100	100					
Depth to Water (ft.)	8.66	8.66	8.67	8.67	8.67	8.67	8.67					
pH	6.71	6.81	6.87	6.86	6.89	6.88	6.87					
Temp. (C)	6.82	6.81	6.75	6.79	6.85	6.88	6.91					
Conductivity (mS/cm)	.895	.888	.883	.880	.877	.876	.875					
Dissolved Oxygen ^{mg/L}	5.64	2.44	1.78	1.69	1.60	1.51	1.50					
ORP (mV)	79.7	79.0	76.8	79.5	81.3	83.6	87.6					
Turbidity (NTU)	.77	.75	.65	.62	.60	.64	.62					
Notes:						turb. .48 w/o flow cell						

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear, no odor

Final Purge: clear, no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

TIME:

Pump on 1520
Pump off 1645

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: TS40000		Sample Time: 1600	
MS/MSD: Yes (No)		Duplicate: Yes (No)	
Duplicate ID: —		Dup. Time: —	
Sampled By: A. O'Neil		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. KOHAGEN

Well ID: MW-13

Client / Job Number: B0064537.0000 Task 00500

Date: 4/14/09

Weather: 40°, OVERCAST / LT RAIN, LT WIND.

Time In: 1020

Time Out: + 1245

Well Information

Depth to Water: (feet) 8.38 (TIC)
Total Depth: (feet) 15.00 (TIC)
Length of Water Column: (feet) 6.62
Volume of Water in Well: (gal) 1.09
Three Well Volumes: (gal) 3.27

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

PUMP ON @ 1055 OFF @ 1230

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 95
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 9.5 L Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50
Rate (mL/min)	100	100	100	100	100	100	100	100	100	100	100	100
Depth to Water (ft.)	8.39	8.39	8.39	8.39	8.39	8.39	8.39	8.39	8.39	8.39	8.39	8.45 8.39
pH	6.78	6.88	7.05	7.09	7.17	7.18	7.22	7.23	7.25	7.25	7.27	7.29
Temp. (C)	8.40	8.54	8.58	8.51	8.53	8.48	8.44	8.45	8.39	8.26	8.39	8.39
Conductivity (mS/cm)	1.015	0.963	0.961	0.961	0.959	0.959	0.959	0.958	0.958	0.958	0.958	0.958
Dissolved Oxygen	1.34	0.86	0.56	0.50	0.47	0.47	0.42	0.39	0.39	0.40	0.38	0.37
ORP (mV)	-68.3	-88.6	-102.7	-106.8	-111.8	-113.5	-114.5	-115.4	-115.8	-115.3	-117.1	-119.1
Turbidity (NTU)	34.4	21.4	21.8	22.3	15.0	8.21	7.22	6.14	5.31	4.34	4.21	4.74
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: SLIGHTLY CLOUDY, NO ODOR.

Final Purge: CLEAR, NO ODOR.

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: YES

Well Lock Present? YES Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

NA

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40004</u>		Sample Time: <u>1200</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. KOHAGEN

Well ID: MW-14

Client / Job Number: B0064537.0000 Task 00500

Date: 4/13/09

Weather: 40°S, OVERCAST, MOD WIND

Time In: 1505

Time Out: 1703

Well Information

Depth to Water: (feet) 6.19 (TIC)
Total Depth: (feet) 11.61 (TIC)
Length of Water Column: (feet) 5.42
Volume of Water in Well: (gal) 0.88
Three Well Volumes: (gal) 2.64

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other: ☐

Purging Information

Pump on @ 1515 OFF @ 1640

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other: ☐
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Duration of Pumping: (min) 85
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: 8.5 L Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50		
Rate (mL/min)	100	100	100	100	100	100	100	100	100	100		
Depth to Water (ft.)	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20		
pH	6.89	6.95	6.96	6.98	6.99	7.00	7.20	7.02	7.04	7.04		
Temp. (C)	7.63	7.58	7.54	7.51	7.49	7.54	7.56	7.52	7.68	7.78		
Conductivity (mS/cm)	0.756	0.769	0.774	0.777	0.787	0.790	0.800	0.805	0.808	0.813		
Dissolved Oxygen	1.07	0.87	0.90	0.87	0.63	0.56	0.45	0.38	0.37	0.35		
ORP (mV)	-47.2	-54.5	-54.6	-54.1	-60.7	-63.9	-69.6	-72.0	-73.7	-75.3		
Turbidity (NTU)	5.17	4.11	3.11	2.67	2.30	1.95	1.43	1.18	1.15	0.99		
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: CLEAR, NO ODOR.

Final Purge: CLEAR, NO ODOR.

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? YES Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID: N/A

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>T540001</u>		Sample Time: <u>1610</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u></u>	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. KOHAGEN Well ID: MW-15
Client / Job Number: B0064537.0000 Task 00500 Date: 4/14/09
Weather: 40's, OVERCAST/RAIN, LT WIND. Time In: 1310 Time Out: _____

Well Information

Depth to Water: (feet) 7.10 (TIC)
Total Depth: (feet) 14.49 (TIC)
Length of Water Column: (feet) 7.39
Volume of Water in Well: (gal) 1.20
Three Well Volumes: (gal) 3.60

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other: _____

Purging Information

PUMP ON @ 1320 OFF @ 1500

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other: _____
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other: _____
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: _____
Duration of Pumping: (min) 100
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.64 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	
Rate (mL/min)	100	100	100	100	100	100	100	100	100	100	100	
Depth to Water (ft.)	7.11	7.11	7.11	7.11	7.11	7.11	7.11	7.11	7.11	7.11	7.11	
pH	7.13	7.13	7.14	7.15	7.15	7.15	7.16	7.17	7.18	7.18	7.18	
Temp. (C)	7.37	7.34	7.38	7.38	7.39	7.46	7.50	7.51	7.53	7.56	7.58	
Conductivity (mS/cm)	0.773	0.771	0.771	0.769	0.769	0.770	0.770	0.776	0.780	0.780	0.782	
Dissolved Oxygen	0.67	0.60	0.43	0.36	0.33	0.26	0.24	0.24	0.25	0.24	0.24	
ORP (mV)	-64.8	-69.7	-72.8	-75.6	-77.3	-78.7	-79.8	-80.5	-81.9	-81.7	-81.4	
Turbidity (NTU)	29.8	23.1	19.6	15.5	13.6	8.88	6.99	5.10	3.82	2.91	2.58	
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: SLIGHTLY CLOUDY, NO ODOOR

Final Purge: CLEAR, NO ODOOR

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Yes Lock Condition: Good

Other: _____

OVERSIGHT SAMPLE ID: N/A

TIME: N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>T540006</u>		Sample Time: <u>1420</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MEK</u>		Log Reviewed By: <u>MEK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. Koenig
Client / Job Number: B0064537.0000 Task 00500

Well ID: MW-2
Date: 4/16/09
Time In: 0945 Time Out: 1130

Weather: 50°, CLEAR, LT WIND

Well Information

Depth to Water: (feet) 10.03 (TIC)
Total Depth: (feet) 15.06 (TIC)
Length of Water Column: (feet) 5.03
Volume of Water in Well: (gal) 0.82
Three Well Volumes: (gal) 2.46

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information PUMP ON @ 1003 OFF @ 1115

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 75
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.98 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00			
Rate (mL/min)	100	100	100	100	100	100	100	100	100			
Depth to Water (ft.)	10.04	10.04	10.04	10.04	10.05	10.05	10.05	10.05	10.05			
pH	7.03	7.05	7.04	7.04	7.05	7.07	7.07	7.07	7.07			
Temp. (C)	10.42	10.60	10.53	10.53	10.68	10.77	10.89	11.01	11.14			
Conductivity (mS/cm)	1.059	1.055	1.057	1.058	1.054	1.055	1.054	1.054	1.053			
Dissolved Oxygen	0.79	0.52	0.64	0.50	0.39	0.36	0.32	0.31	0.29			
ORP (mV)	-89.7	-94.0	-92.4	-92.4	-97.4	-100.6	-101.1	-103.0	-104.3			
Turbidity (NTU)	20.0	17.2	10.0	7.74	6.21	5.55	3.09	2.71	2.39			
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: SLT CLOUDY, NO ODOR

Final Purge: CLEAR, NO ODOR

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): GOOD

Locking Protective Well Cap/expansion plug: GOOD

Well Lock Present? YES Lock Condition: GOOD

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40012</u>		Sample Time: <u>1050</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: MFK/ACO
Client / Job Number: B0064537.0000 Task 00500

Well ID: SW SAMPLE @ SG-5

Weather: 40°, OVERCAST Windy

Date: 4/13/09

Time In: 1415

Time Out:

Well Information SW SAMPLE @ SG-5

Depth to Water: (feet) (TIC)
Total Depth: (feet) (TIC)
Length of Water Column: (feet)
Volume of Water in Well: (gal)
Three Well Volumes: (gal)

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☐ No ☐
Measuring Point Marked: Yes ☐ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☐ Other:
Sampling Method: Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Duration of Pumping: (min)
Average Pumping Rate: (ml/min) Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

	1	2	3	4	5	6	7	8	9	10	11	12
Time:	1425											
Volume Purged (L)	—											
Rate (mL/min)	—											
Depth to Water (ft.)	—											
pH	6.73											
Temp. (C)	9.22											
Conductivity (mS/cm)	0.552											
Dissolved Oxygen	12.82											
ORP (mV)	191.4											
Turbidity (NTU)	7.76											
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge:

Final Purge:

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover):

Locking Protective Well Cap/expansion plug:

Well Lock Present? Lock Condition:

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>SG-5 TS31000</u>		Sample Time: <u>1425</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>—</u>		Dup. Time: <u>—</u>	
Sampled By: <u>MFK</u>		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. Kamen
Client / Job Number: B0064537.0000 Task 00500
Weather: 50°S, CLEAR, LT WIND

Well ID: SW056-5
Date: 4/17/09
Time In: 1100 Time Out: 1130

Well Information

Depth to Water: (feet) (TIC)
Total Depth: (feet) (TIC)
Length of Water Column: (feet)
Volume of Water in Well: (gal)
Three Well Volumes: (gal)

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☐ No ☐
Measuring Point Marked: Yes ☐ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

TAKEN AS SW SAMPLE @ SG-5

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☐ Other:
Sampling Method: Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Duration of Pumping: (min)
Average Pumping Rate: (ml/min) Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	11:51	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	—											
Rate (mL/min)	—											
Depth to Water (ft.)	—											
pH	8.05											
Temp. (C)	11.17											
Conductivity (mS/cm)	0.543											
Dissolved Oxygen	13.20											
ORP (mV)	107.7											
Turbidity (NTU)	4.91											
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge:

Final Purge:

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover):

Locking Protective Well Cap/expansion plug:

Well Lock Present? Lock Condition:

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	8	Chloride, Sulfate, & Alkalinity (250 ml)	4
TSS (1 L Poly)	4	Total Metals (250 ml with HNO ₃)	4
PCBs (Total) (Amber)	8	TDS (250 ml)	4
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS31001</u>		Sample Time: <u>1115</u>	
MS/MSD: <u>(Yes)</u> No		Duplicate: <u>(Yes)</u> No	
Duplicate ID: <u>TS31002</u>		Dup. Time:	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Attachment 3B

Groundwater and Surface Water
Sampling Logs – Quarter 2 –
June/July 2009

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: M. KOUHAGEN

Well ID: MW-1

Client / Job Number: B0064539.0000 Task 00500

Date: 6/7/09

Weather: 70° F, OVERCAST, MOD WIND

Time In: 1430 Time Out: 1530

Well Information

Depth to Water: (feet) 7.75 (TIC)
Total Depth: (feet) 12.72 (TIC)
Length of Water Column: (feet) 4.97
Volume of Water in Well: (gal) 0.81
Three Well Volumes: (gal) 2.43

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 85
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.25 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

	1	2	3	4	5	6	7	8	9	10	11	12
Time:	1445	1450	1455	1500	1505	1510						
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	7.77	7.77	7.77	7.77	7.77	7.77						
pH	7.54	7.55	7.53	7.53	7.50	7.47						
Temp. (C)	14.84	14.80	14.64	14.52	14.39	14.62						
Conductivity (mS/cm)	0.872	0.872	0.873	0.874	0.876	0.875						
Dissolved Oxygen	0.30	0.30	0.28	0.20	0.21	0.23						
ORP (mV)	-113.1	-107.9	-108.2	-106.3	-109.0	-107.8						
Turbidity (NTU)	6.10	4.88	3.80	2.12	2.01	1.80						
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: CLEAR, NO ODOR.

Final Purge: CLEAR, NO ODOR.

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? YES Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID:

PGW-MW1-01

TIME:

1510

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40032</u>		Sample Time: <u>1510</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MEK</u>		Log Reviewed By: <u>MEK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel:

Client / Job Number: B0064539.0000 Task 00500

Weather: 64° light rain

Well ID: MW-02

Date: 7-01-09

Time In: 1140 Time Out: 1310

Well Information

Depth to Water: (feet) 10.97 (TIC)
Total Depth: (feet) 15.10 (TIC)
Length of Water Column: (feet) 4.13
Volume of Water in Well: (gal) .67
Three Well Volumes: (gal) 2.01

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 90
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.3 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5	4	4.5				
Rate (mL/min)	100	100	100	100	100	100	100	100				
Depth to Water (ft.)	*7 10.99	10.99	10.99	10.99	10.99	10.99	10.99	10.99				
pH	7.74	7.84	7.89	7.89	7.90	7.89	7.90	7.91				
Temp. (C)	13.69	13.64	13.62	13.49	13.55	13.40	13.41	13.45				
Conductivity (mS/cm)	1.122	1.122	1.122	1.125	1.124	1.126	1.126	1.125				
Dissolved Oxygen	.80	.58	.47	.41	.41	.33	.34	.33				
ORP (mV)	-77.0	-80.9	-77.1	-80.5	-66.4	-71.6	-71.4	-65.7				
Turbidity (NTU)	2.96	2.32	1.84	1.20	1.03	.94	.81	.78				
Notes:												

Pump on @ 1145 Pump off @ 1305

Purge Water Description (Color? Odor? Turbid? Other?):

Initial Purge: Clear, no odor

Final Purge: Clear, no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: TS40029		Sample Time: 1230	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: N/A		Dup. Time: N/A	
Sampled By: A. O'Neil		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: A. O'Neil Well ID: MW-03
Client / Job Number: B0064539.0000 Task 00500 Date: 7-01-09
Weather: 63° overcast Time In: 0930 Time Out: 1135

Well Information
Depth to Water: (feet) 9.84 (TIC)
Total Depth: (feet) 13.75 (TIC)
Length of Water Column: (feet) 3.91
Volume of Water in Well: (gal) .63
Three Well Volumes: (gal) 1.9

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other: ☐

Purging Information

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other: ☐
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Duration of Pumping: (min) 110
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.90 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	0945	0950	0955	1000	1025	1030	1035	1040	1045			
Rate (mL/min)	1	1.5	2	2.5	5	5.5	6	6.5	7			
Depth to Water (ft.)	100	100	100	100	100	160	100	100	100			
pH	9.86				9.86	9.86	9.86	9.86	9.86			
Temp. (C)	1.80	YSI Maintenance			8.31	7.88	7.92	7.96	7.98			
Conductivity (mS/cm)	14.73	Recalibrated for pH			14.36	14.31	14.21	14.10	14.13			
Dissolved Oxygen	1.11				1.029	1.017	1.008	1.007	1.006			
ORP (mV)	.81				.38	.41	.46	.41	.38			
Turbidity (NTU)	-53.4				-78.8	-72.3	-70.3	-71.3	-66.8			
Notes:	116.4				1.87	1.65	1.48	1.21	.91			

Pump on 0935 Pump off 1130
Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, no odor

Final Purge: Clear, no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

TIME:

PGW-MW3-01

1045

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40027</u>		Sample Time: <u>1045</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: A. O'Neil

Well ID: MW-04

Client / Job Number: B0064539.0000 Task 00500

Date: 6-30-09

Weather: 67° overcast

Time In: 1320

Time Out: 1445

Well Information

Depth to Water:	(feet)	<u>11.15</u>	(TIC)
Total Depth:	(feet)	<u>14.44</u>	(TIC)
Length of Water Column:	(feet)	<u>3.29</u>	
Volume of Water in Well:	(gal)	<u>.53</u>	
Three Well Volumes:	(gal)	<u>1.6</u>	

Well Type:	Flushmount <input type="checkbox"/>	Stick-Up <input checked="" type="checkbox"/>
Well Material:	Stainless Steel <input checked="" type="checkbox"/>	PVC <input type="checkbox"/>
Well Locked:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Measuring Point Marked:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Well Diameter:	1" <input type="checkbox"/>	2" <input checked="" type="checkbox"/> Other: <input type="checkbox"/>

Purging Information

Purging Method:	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Tubing Material:	Silicone <input type="checkbox"/>	Polyethylene <input type="checkbox"/>	Teflon <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>
Sampling Method:	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Duration of Pumping:	(min)	<u>85</u>		
Average Pumping Rate:	(ml/min)	<u>100</u>	Water-Quality Meter Type:	<u>YSI-556 & Hach 2100P</u>
Total Volume Removed:	(gal)	<u>2.24</u>	Did well go dry:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	<u>1</u>	<u>1.5</u>	<u>2</u>	<u>2.5</u>	<u>3</u>	<u>3.5</u>						
Rate (mL/min)	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>						
Depth to Water (ft.)	<u>11.16</u>	<u>11.16</u>	<u>11.16</u>	<u>11.16</u>	<u>11.16</u>	<u>11.16</u>						
pH	<u>7.17</u>	<u>7.20</u>	<u>7.18</u>	<u>7.17</u>	<u>7.17</u>	<u>7.16</u>						
Temp. (C)	<u>15.73</u>	<u>15.70</u>	<u>15.67</u>	<u>15.62</u>	<u>15.55</u>	<u>15.52</u>						
Conductivity (mS/cm)	<u>1.090</u>	<u>1.089</u>	<u>1.087</u>	<u>1.084</u>	<u>1.087</u>	<u>1.085</u>						
Dissolved Oxygen	<u>.49</u>	<u>.60</u>	<u>.48</u>	<u>.39</u>	<u>.38</u>	<u>.33</u>						
ORP (mV)	<u>-80.2</u>	<u>-79.9</u>	<u>-80.0</u>	<u>-80.3</u>	<u>-80.2</u>	<u>-80.0</u>						
Turbidity (NTU)	<u>7.83</u>	<u>6.48</u>	<u>5.49</u>	<u>4.08</u>	<u>3.25</u>	<u>3.42</u>						
Notes:												

Pump on @ 1325 Pump off @ 1435
Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear, no odor

Final Purge: clear, no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	<u>2</u>	Chloride, Sulfate, & Alkalinity. (250 ml)	<u>1</u>
TSS (1 L Poly)	<u>1</u>	Total Metals (250 ml with HNO ₃)	<u>1</u>
PCBs (Total) (Amber)	<u>2</u>	TDS (250 ml)	<u>1</u>
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40025</u>		Sample Time: <u>1400</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>—</u>		Dup. Time: <u>—</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: M. Kowagen
Client / Job Number: B0064539.0000 Task 00500
Weather: 65°F, A PARTLY CLOUDY, MOD WIND

Well ID: MW-5
Date: 6/30/09
Time In: 1300 Time Out: 1415

Well Information
Depth to Water: (feet) 11.02 (TIC)
Total Depth: (feet) 14.23 (TIC)
Length of Water Column: (feet) 3.21
Volume of Water in Well: (gal) 0.52
Three Well Volumes: (gal) 1.57

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information
Pump on @ 1305
OFF @ 1610

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Duration of Pumping: (min) 185
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 4.89 Did well go dry: Yes ☐ No ☒

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	4.00	4.50	5.00	5.50	6.00	6.50	
Rate (mL/min)	100	106	106	100	100	100	100	106	100	100	100	
Depth to Water (ft.)	11.03	11.03	11.03	11.03	11.03	11.03	11.03	11.03	11.03	11.03	11.03	
pH	7.61	7.53	7.52	7.53	7.52	7.43	7.43	7.43	7.41	7.43	7.42	
Temp. (C)	15.68	7.5	16.10	15.83	15.64	15.21	15.00	14.83	14.85	14.94	14.84	14.62
Conductivity (mS/cm)	1.109	1.098	1.092	1.093	1.091	1.084	1.084	1.083	1.079	1.079	1.077	
Dissolved Oxygen	0.31	0.32	0.34	0.25	0.19	0.35	0.18	0.20	0.14	0.14	0.15	
ORP (mV)	-77.6	-79.9	-78.8	-81.9	-79.7	-78.8	-75.7	-74.9	-75.6	-79.5	-80.6	
Turbidity (NTU)	35.0	28.1	24.9	21.2	18.0	9.75	8.88	4.98	4.60	4.36	3.67	
Notes:					CLEANED FILL							

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: SILT CLOUDY, NO ODOR

Final Purge: CLEAR, NO ODOR

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Lock Condition: Good

Other: YES Good

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	6	Chloride, Sulfate, & Alkalinity. (250 ml)	3
TSS (1 L Poly)	3	Total Metals (250 ml with HNO ₃)	3
PCBs (Total) (Amber)	6	TDS (250 ml)	3
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS4002H</u>		Sample Time: <u>1410</u>	
MS/MSD: <u>Yes</u> No		Duplicate: Yes <u>No</u>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

ARCADIS

Water Sampling Log

Project Plainwell Project No. B064539.00.500 Page 1 of 2
 Site Location Plainwell, MI Date 7-01-09
 Site/Well No. MW-06 Replicate No. N/A Code No. N/A
 Weather 65° overcast Sampling Time: Begin 1355 End 1505

Evacuation Data

Measuring Point TOC
 MP Elevation (ft) N/A
 Land Surface Elevation (ft) N/A
 Sounded Well Depth (ft bmp) 15.85
 Depth to Water (ft bmp) 10.85
 Water-Level Elevation (ft) N/A
 Water Column in Well (ft) 5.0
 Casing Diameter/Type 2" stainless steel
 Gallons in Well .81
 Gallons Pumped/Bailed Prior to Sampling 1.8
 Sample Pump Intake Setting (ft bmp) 1 ft bmp
 Purge Time begin 1315 end 1505
 Pumping Rate (ml/min) 100
 Evacuation Method peristaltic pump

Field Parameters

Temperature (°C) 13.00
 SpC (mS/cm) .969
 CND (mS/cm) .747
 Dissolved Oxygen (%) 2.4
 Dissolved Oxygen (mg/L) .26
 pH (s.u.) 8.22
 ORP (mV) -78.4
 Turbidity (NTU) .86
 Color clear
 Odor none
 Appearance clear
 Sampling Method Low Flow
 Remarks * Dupe-2 collected
ID-TS40030
DUPE ID-TS40031

Com ID:
 PLW-MW6-01
 3 bottles:
 1 msl
 1 mso

Constituents Sampled	Container Description	Number	Preservative
<u>TOC's</u>	<u>40ml VOA</u>	<u>4</u>	<u>H2SO4</u>
<u>TSS</u>	<u>1L poly</u>	<u>2</u>	<u>-</u>
<u>PCBs</u>	<u>1L amber</u>	<u>4</u>	<u>-</u>
<u>Chloride, Sulfate, Alkalinity</u>	<u>250ml poly</u>	<u>2</u>	<u>-</u>
<u>Total Metals</u>	<u>250ml poly</u>	<u>2</u>	<u>HNO3</u>
<u>TDS</u>	<u>250 ml poly</u>	<u>2</u>	<u>-</u>

Sampling Personnel A. O'Neil

Well Casing Volumes

Gal./Ft.	0.5" = 0.01	1-1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-1/2" = 0.09	2-1/2" = 0.26	3-1/2" = 0.50	6" = 1.47

bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

YSI/LOW FLOW SAMPLING LOG

PAGE 2 OF 2

PROJ #: B0064539.0000.00500

LOC: Plainwell, MI

[illegible]

Vol
L
1
1.5
2
2.5
3
3.5
4

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: M. Kottagen

Well ID: MW-7

Client / Job Number: B0064539.0000 Task 00500

Date: 7/01/09

Weather: 60° OVERCAST, LT WIND.

Time In: 1140

Time Out: 1330

Well Information

Depth to Water: (feet) 11.30 (TIC)
Total Depth: (feet) 14.68 (TIC)
Length of Water Column: (feet) 3.38
Volume of Water in Well: (gal) 0.55
Three Well Volumes: (gal) 1.65

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other: ☐

Purging Information

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☐ Other: ☐
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: ☐

Duration of Pumping: (min) 110

Average Pumping Rate: (ml/min) 100

Water-Quality Meter Type: YSI-556 & Hach 2100P

Total Volume Removed: (gal) 2.91

Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	2.00	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50			
Rate (mL/min)	100	100	100	100	100	100	100	100	100			
Depth to Water (ft.)	11.31	11.31	11.31	11.31	11.31	11.31	11.31	11.31	11.31			
pH	7.40	7.41	7.42	7.42	7.42	7.43	7.43	7.42	7.41			
Temp. (C)	13.11	13.18	13.46	13.87	13.81	13.57	13.61	13.40	13.47			
Conductivity (mS/cm)	1.039	1.019	1.011	1.013	1.012	1.004	1.000	0.999	0.997			
Dissolved Oxygen	0.43	0.54	0.51	0.32	0.53	0.28	0.21	0.20	0.20			
ORP (mV)	-57.4	-60.5	-63.2	-60.0	-62.9	-68.6	-71.5	-73.8	-75.4			
Turbidity (NTU)	25.5	16.7	13.2	11.1	8.32	6.27	4.84	4.52	3.51			
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: CLOUDY, NO ODOR

Final Purge: CLEAR, NO ODOR

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Yes Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID: N/A

TIME: N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: TS40028		Sample Time: 1230	
MS/MSD: Yes No	Duplicate: Yes No		
Duplicate ID: N/A		Dup. Time: N/A	
Sampled By: MFK	Log Reviewed By: MFK		
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: M. Kowagen

Well ID: MW-8

Client / Job Number: B0064539.0000 Task 00500

Date: 07/01/09

Weather: COOL, OVERCAST, LT WIND

Time In: 0930

Time Out: 1115

Well Information

Depth to Water: (feet) 9.89 (TIC)
Total Depth: (feet) 18.46 (TIC)
Length of Water Column: (feet) 8.57
Volume of Water in Well: (gal) 1.40
Three Well Volumes: (gal) 4.19

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:

Duration of Pumping: (min) 90
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.38 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
∇ 0.1	∇ 10%	∇ 3.0%	∇ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	2.00	2.50	3.50	4.00	4.50						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	9.89	9.89	9.89	9.89	9.89	9.89						
pH	7.36	7.43	7.42	7.41	7.40	7.40						
Temp. (C)	14.31	14.17	14.06	14.10	14.08	14.13						
Conductivity (mS/cm)	1.054	1.055	1.054	1.056	1.053	1.053						
Dissolved Oxygen	2.12	0.24	0.31	0.22	0.20	0.20						
ORP (mV)	-72.7	-75.5	-78.1	-76.9	-75.4	-75.7						
Turbidity (NTU)	26.8	14.6	9.90	4.97	4.55	3.51						
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: CLOUDY, NO ODOR

Final Purge: CLEAR, NO ODOR

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? YES Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID:

TIME:

N/A

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40026</u>		Sample Time: <u>1025</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MEK</u>		Log Reviewed By: <u>MEK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: A. O'Neil

Well ID: HW-09

Client / Job Number: B0064539.0000 Task 00500

Date: 7-02-09

Weather: 64° overcast

Time In: 0905

Time Out: 1030

Well Information

Depth to Water:	(feet)	<u>14.69</u>	(TIC)
Total Depth:	(feet)	<u>19.49</u>	(TIC)
Length of Water Column:	(feet)	<u>4.8</u>	
Volume of Water in Well:	(gal)	<u>.78</u>	
Three Well Volumes:	(gal)	<u>2.34</u>	

Well Type:	Flushmount <input type="checkbox"/>	Stick-Up <input checked="" type="checkbox"/>
Well Material:	Stainless Steel <input checked="" type="checkbox"/>	PVC <input type="checkbox"/>
Well Locked:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Measuring Point Marked:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Well Diameter:	1" <input type="checkbox"/>	2" <input checked="" type="checkbox"/> Other: <input type="checkbox"/>

Purging Information

Purging Method:	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Tubing Material:	Silicone <input type="checkbox"/>	Polyethylene <input type="checkbox"/>	Teflon <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>
Sampling Method:	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Duration of Pumping:	(min)	<u>85</u>		
Average Pumping Rate:	(ml/min)	<u>100</u>	Water-Quality Meter Type:	<u>YSI-556 & Hach 2100P</u>
Total Volume Removed:	(gal)	<u>2.24</u>	Did well go dry:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	<u>1</u>	<u>1.5</u>	<u>2</u>	<u>2.5</u>	<u>3</u>	<u>3.5</u>	<u>4</u>					
Rate (mL/min)	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>					
Depth to Water (ft.)	<u>14.70</u>	<u>14.70</u>	<u>14.70</u>	<u>14.70</u>	<u>14.70</u>	<u>14.70</u>	<u>14.70</u>					
pH	<u>7.21</u>	<u>7.32</u>	<u>7.35</u>	<u>7.36</u>	<u>7.38</u>	<u>7.37</u>	<u>7.36</u>					
Temp. (C)	<u>11.96</u>	<u>11.87</u>	<u>11.81</u>	<u>11.80</u>	<u>11.73</u>	<u>11.71</u>	<u>11.69</u>					
Conductivity (mS/cm)	<u>.877</u>	<u>.857</u>	<u>.849</u>	<u>.843</u>	<u>.838</u>	<u>.837</u>	<u>.837</u>					
Dissolved Oxygen	<u>.51</u>	<u>.39</u>	<u>.34</u>	<u>.29</u>	<u>.29</u>	<u>.29</u>	<u>.31</u>					
ORP (mV)	<u>-66.9</u>	<u>-21.8</u>	<u>-10.9</u>	<u>-8.9</u>	<u>-18.3</u>	<u>-17.6</u>	<u>-16.2</u>					
Turbidity (NTU)	<u>6.39</u>	<u>5.18</u>	<u>3.49</u>	<u>3.06</u>	<u>2.42</u>	<u>1.01</u>	<u>1.42</u>					
Notes:												

Pump on 0915

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, no odor

Final Purge: Clear, no odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	<u>2</u>	Chloride, Sulfate, & Alkalinity. (250 ml)	<u>1</u>
TSS (1 L Poly)	<u>1</u>	Total Metals (250 ml with HNO ₃)	<u>1</u>
PCBs (Total) (Amber)	<u>2</u>	TDS (250 ml)	<u>1</u>
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40033</u>		Sample Time: <u>0955</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By: <u></u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group - Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: A. O'Neil

Well ID: MW-10

Client / Job Number: B0064539.0000 Task 00500

Date: 6-30-09

Weather: 65° overcast

Time In: 1115

Time Out:

Well Information

Depth to Water: (feet) 8.48 (TIC)
Total Depth: (feet) 12.45^{AD} (TIC)
Length of Water Column: (feet) 3.97
Volume of Water in Well: (gal) .64
Three Well Volumes: (gal) 1.9

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Bamant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Bamant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 35
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) .92 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

	1	2	3	4	5	6	7	8	9	10	11	12
Time:	<u>1130</u>	<u>1135</u>	<u>1140</u>	<u>1145</u>	<u>1150</u>	<u>1155</u>						
Volume Purged (L)	<u>1</u>	<u>1.5</u>	<u>2</u>	<u>2.5</u>	<u>3</u>	<u>3.5</u>						
Rate (mL/min)	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>						
Depth to Water (ft.)	<u>8.49</u>	<u>8.49</u>	<u>8.49</u>	<u>8.49</u>	<u>8.49</u>	<u>8.49</u>						
pH	<u>7.01</u>	<u>7.00</u>	<u>7.00</u>	<u>7.01</u>	<u>7.01</u>	<u>7.01</u>						
Temp. (C)	<u>14.31</u>	<u>14.08</u>	<u>14.18</u>	<u>14.21</u>	<u>14.19</u>	<u>14.05</u>						
Conductivity (mS/cm)	<u>1.140</u>	<u>.907</u>	<u>1.145</u>	<u>1.144</u>	<u>1.143</u>	<u>1.145</u>						
Dissolved Oxygen ^{ms} ₂	<u>1.11</u>	<u>.75</u>	<u>.65</u>	<u>.51</u>	<u>.43</u>	<u>.41</u>						
ORP (mV)	<u>-77.8</u>	<u>-79.7</u>	<u>-82.6</u>	<u>-77.0</u>	<u>-74.8</u>	<u>-76.5</u>						
Turbidity (NTU)	<u>5.11</u>	<u>4.86</u>	<u>3.12</u>	<u>2.27</u>	<u>2.24</u>	<u>2.36</u>						
Notes:												

Pump on @ 1120

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear, no odor, low turbidity

Final Purge: clear, no odor, low turbidity

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

PGW-MW10-01 @ 1155

PGW-MW10-03 @ 1155 (dup)

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	<u>2</u>	Chloride, Sulfate, & Alkalinity (250 ml)	<u>1</u>
TSS (1 L Poly)	<u>1</u>	Total Metals (250 ml with HNO ₃)	<u>1</u>
PCBs (Total) (Amber)	<u>2</u>	TDS (250 ml)	<u>1</u>
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40023</u>		Sample Time: <u>1155</u>	
MS/MSD: Yes <input checked="" type="checkbox"/>		Duplicate: Yes <input checked="" type="checkbox"/>	
Duplicate ID: <u>-</u>		Dup. Time: <u>-</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

ARCADIS

Water Sampling Log

Project Plainwell Project No. B00645.39.500 Page 1 of 2
 Site Location Plainwell, MI Date 6-29-09
 Site/Well No. MW-11 Replicate No. N/A Code No. N/A
 Weather 68° overcast Sampling Time: Begin 1535 End 1620

Evacuation Data

Measuring Point TOC
 MP Elevation (ft) N/A
 Land Surface Elevation (ft) N/A
 Sounded Well Depth (ft bmp) 12.95
 Depth to Water (ft bmp) 7.49
 Water-Level Elevation (ft) N/A
 Water Column in Well (ft) 5.46
 Casing Diameter/Type 2" stainless steel
 Gallons in Well .88
 Gallons Pumped/Bailed Prior to Sampling 1.05
 Sample Pump Intake Setting (ft bmp) 1ft bmp
 Purge Time begin 1455 end 1620
 Pumping Rate (ml/min) 100
 Evacuation Method peristaltic (Geo Pump)

Field Parameters

Temperature (°C) 14.24
 SpC (mS/cm) 1.015
 CND (mS/cm) .806
 Dissolved Oxygen (%) 3.6
 Dissolved Oxygen (mg/L) .37
 pH (s.u.) 7.23
 ORP (mV) -122.6
 Turbidity (NTU) 3.88
 Color clear
 Odor none
 Appearance clear
 Sampling Method Low Flow
 Remarks Sample ID: TS40019

Constituents Sampled	Container Description	Number	Preservative
<u>TOCs</u>	<u>40ml VOA</u>	<u>2</u>	<u>H2SO4</u>
<u>TSS</u>	<u>1L Poly</u>	<u>1</u>	<u>-</u>
<u>PCBs</u>	<u>1L Amber</u>	<u>2</u>	<u>-</u>
<u>Chloride, Sulfate & Alkalinity</u>	<u>250ml poly</u>	<u>1</u>	<u>-</u>
<u>Total Metals</u>	<u>250ml poly</u>	<u>1</u>	<u>HNO3</u>
<u>TDS</u>	<u>250ml poly</u>	<u>1</u>	<u>-</u>

Sampling Personnel

A. O'Neil

Well Casing Volumes					
Gal./Ft.	0.5" = 0.01	1-1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1" = 0.04	1-1/2" = 0.09	2-1/2" = 0.26	3-1/2" = 0.50	6" = 1.47
bmp	Below measuring point	mL	Milliliter	NTU	Nephelometric turbidity units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	Feet	msl	Mean sea level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not recorded	VOC	Volatile organic compounds

YSI/LOW FLOW SAMPLING LOG

WELL: MW-11

PROJ #: B00645.0039.00506

DATE: 6-29-09

LOC: Plainwell, MI

[illegible]

Kalamazoo River Study
Group - Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: A. O'Neil
Client / Job Number: B0064537.0000 Task 00500

Well ID: MW-12
Date: 6-29-09

Weather: 70° overcast, moderate wind

Time In: 1300 Time Out: 1450

Well Information

Depth to Water: (feet) 9.26 (TIC)
Total Depth: (feet) 11.98 (TIC)
Length of Water Column: (feet) 2.72
Volume of Water in Well: (gal) .44
Three Well Volumes: (gal) 1.33

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☐ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 55
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.45 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5		
Rate (mL/min)	100	100	100	100	100	100	100	100	100	100		
Depth to Water (ft.)	9.33	9.33	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34		
pH	6.65	6.63	6.63	6.63	6.63	6.62	6.64	6.64	6.63	6.62		
Temp. (C)	20.36	20.30	20.23	20.23	20.17	20.17	20.20	20.18	20.03	20.10		
Conductivity (mS/cm)	1.118	1.109	1.103	1.106	1.103	1.102	1.099	1.101	1.101	1.100		
Dissolved Oxygen ^{mg/L}	1.99	2.36	1.39	.97	.79	.70	.60	.55	.48	.45		
ORP (mV)	109.1	112.3	112.8	113.1	113.1	113.5	112.9	113.2	112.9	112.2		
Turbidity (NTU)	.87	.63	.54	.53	.65	.57	.52	.55	.71	.57		
Notes:												

Pump on @ 1300 Pump off @ 1445
Purge Water Description (Color? Odor? Turbid? Other?):

Initial Purge: clear, no odor, low turbidity

Final Purge: clear, no odor, low turbidity

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? YES Lock Condition: good

Other:

OVERSIGHT SAMPLE ID: PGW-MW12-01 TIME 1400

FIELD BLANKS
PGW-MW12-02 @ 1400
PGW-MW12-02 @ 1401

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: T540017		Sample Time: 1400	
MS/MSD: Yes <input checked="" type="radio"/> No <input type="radio"/>		Duplicate: Yes <input type="radio"/> No <input checked="" type="radio"/>	
Duplicate ID: —		Dup. Time: —	
Sampled By: A. O'Neil		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: A. O'Neil
Client / Job Number: B0064539.0000 Task 00500
Weather: 63° overcast

Well ID: MW-13
Date: 6-30-09
Time In: 0915 Time Out: 1105

Well Information

Depth to Water: (feet) 9.12 (TIC)
Total Depth: (feet) 15.00 (TIC)
Length of Water Column: (feet) 5.88
Volume of Water in Well: (gal) .95
Three Well Volumes: (gal) 2.87

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☐ No ☒
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 40
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.05 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2	2.5	3	3.5	4					
Rate (mL/min)	100	100	100	100	100	100	100					
Depth to Water (ft.)	13.00 9.13	9.14	9.14	9.14	9.14	9.14	9.14					
pH	7.24	7.21	7.22	7.24	7.25	7.25	7.25					
Temp. (C)	12.98	12.58	12.40	12.28	12.27	12.12	12.13					
Conductivity (mS/cm)	.898	.832	.816	.799	.793	.790	.787					
Dissolved Oxygen ^{ms} (%)	1.87	.50	.40	.56	.53	.47	.45					
ORP (mV)	-69.7	-72.6	-64.7	-76.9	-79.9	-83.4	-85.0					
Turbidity (NTU)	12.6	4.13	2.71	1.44	1.68	2.97	1.31					
Notes:												

Pump on @ 0920 Pump off @ 1100
Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: clear, no odor, low turbidity

Final Purge: clear, no odor, low turbidity

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): good

Locking Protective Well Cap/expansion plug: good

Well Lock Present? yes Lock Condition: good

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	4	Chloride, Sulfate, & Alkalinity (250 ml)	2
TSS (1 L Poly)	2	Total Metals (250 ml with HNO ₃)	2
PCBs (Total) (Amber)	4	TDS (250 ml)	2
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40020</u>		Sample Time: <u>1000</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duplicate ID: <u>TS40021</u>		Dup. Time: <u>1000</u>	
Sampled By: <u>A. O'Neil</u>		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group - Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Spring 2009 EVENT

Sampling Personnel: M. KAHAGEN
Client / Job Number: B0064537.0000 Task 00500
Weather: 70°F. PARTLY CLOUDY, WINDY

Well ID: MW-14
Date: 6/29/09
Time In: 1400 Time Out: 1555

Well Information

Depth to Water: (feet) 6.87 (TIC)
Total Depth: (feet) 11.60 (TIC)
Length of Water Column: (feet) 4.73
Volume of Water in Well: (gal) 0.77
Three Well Volumes: (gal) 2.31

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☐ No ☐
Measuring Point Marked: Yes ☐ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☒ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 90
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.38 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50	4.00					
Rate (mL/min)	100	100	100	100	100	100	100					
Depth to Water (ft.)	6.87	6.87	6.87	6.87	6.87	6.87	6.87					
pH	7.89	7.85	7.77	7.75	7.71	7.69	7.68					
Temp. (C)	14.15	13.88	13.57	13.49	13.45	13.35	13.33					
Conductivity (mS/cm)	0.705	0.705	0.707	0.707	0.707	0.709	0.710					
Dissolved Oxygen	1.05	1.08	0.46	0.36	0.32	0.33	0.34					
ORP (mV)	-72.1	-74.0	-76.2	-68.0	-50.6	-55.8	-54.2					
Turbidity (NTU)	4.07	3.13	2.85	2.61	2.76	2.66	2.51					
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: CLEAR, NO ODOR.

Final Purge: CLEAR, NO ODOR

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Lock Condition:

Other: Yes

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40018</u>		Sample Time: <u>1455</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont			

Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: **MFK**

Well ID: **MW-15**

Client / Job Number: B0064539.0000 Task 00500

Date: **6/30/09**

Weather: **60°S, OVERCAST, Mod Wind**

Time In: **0945**

Time Out: **1130**

Well Information

Depth to Water: (feet) **7.92** (TIC)
Total Depth: (feet) **9.12 14.50** (TIC)
Length of Water Column: (feet) **1.20 6.58**
Volume of Water in Well: (gal) **0.20 1.07**
Three Well Volumes: (gal) **0.60 3.21**

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ **2" ☒** Other:

Purging Information

PUMP ON @ 1000 OFF @ 1120

Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) **120**
Average Pumping Rate: (ml/min) **100** Water-Quality Meter Type: **YSI-556 & Hach 2100P**
Total Volume Removed: (gal) **3.17** Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50	4.00					
Rate (mL/min)	100	100	100	100	100	100	100					
Depth to Water (ft.)	7.93	7.93	7.93	7.93	7.93	7.93	7.93					
pH	7.33	7.34	7.34	7.34	7.34	7.33	7.35					
Temp. (C)	11.94	11.92	11.98	11.93	11.90	11.97	11.89					
Conductivity (mS/cm)	0.799	0.790	0.782	0.773	0.762	0.761	0.762					
Dissolved Oxygen	0.95	0.60	0.41	0.46	0.42	0.40	0.39					
ORP (mV)	-70.2	-63.5	-59.3	-48.3	-49.7	-51.4	-51.7					
Turbidity (NTU)	5.50	4.07	3.36	2.38	1.93	1.45	1.13					
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: **CLEAR, NO ODOR**

Final Purge: **CLEAR, NO ODOR**

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): **Good**

Locking Protective Well Cap/expansion plug: **Good**

Well Lock Present? **YES** Lock Condition: **Good**

Other:

OVERSIGHT SAMPLE ID:

N/A

TIME:

N/A

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: TS40022	MFK	Sample Time: 1040	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: N/A		Dup. Time: N/A	
Sampled By: MFK		Log Reviewed By: MFK	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Kalamazoo River Study
Group - Plainwell TCRA,
Plainwell, Michigan

GROUNDWATER SAMPLING LOG

SUMMER
Spring 2009 EVENT

Sampling Personnel: M. KOTTAGEN
Client / Job Number: B0064539.0000 Task 00500
Weather: 70°F, OVERCAST WINDY

Well ID: SW ④ 5G-5
Date: 6/29/09
Time In: 1300 Time Out: 1330

Well Information

Depth to Water: (feet) (TIC)
Total Depth: (feet) (TIC)
Length of Water Column: (feet)
Volume of Water in Well: (gal)
Three Well Volumes: (gal)

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☐ No ☐
Measuring Point Marked: Yes ☐ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☐ Other:
Sampling Method: Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Duration of Pumping: (min)
Average Pumping Rate: (ml/min) Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1310											
Rate (mL/min)	-											
Depth to Water (ft.)	-											
pH	8.28											
Temp. (C)	23.45											
Conductivity (mS/cm)	0.622											
Dissolved Oxygen	8.24											
ORP (mV)	88.0											
Turbidity (NTU)	10.3											
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge:

Final Purge:

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover):

Locking Protective Well Cap/expansion plug:

Well Lock Present? Lock Condition:

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>T531003</u>		Sample Time: <u>1310</u>	
MS/MSD: Yes <u>8</u>		Duplicate: Yes <u>8</u>	
Duplicate ID: <u> </u>		Dup. Time: <u> </u>	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Summer 2009 EVENT

Sampling Personnel: M. KOHAGEN

Well ID: SWD SG-5

Client / Job Number: B0064539.0000 Task 00500

Date: 7/2/09

Weather: 70°F, OVERCAST

Time In: 1020

Time Out:

Well Information

Depth to Water:	(feet)	(TIC)
Total Depth:	(feet)	(TIC)
Length of Water Column:	(feet)	
Volume of Water in Well:	(gal)	
Three Well Volumes:	(gal)	

Well Type:	Flushmount <input type="checkbox"/>	Stick-Up <input checked="" type="checkbox"/>
Well Material:	Stainless Steel <input checked="" type="checkbox"/>	PVC <input type="checkbox"/>
Well Locked:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Measuring Point Marked:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Well Diameter:	1" <input type="checkbox"/>	2" <input checked="" type="checkbox"/> Other:

Purging Information

Purging Method: (Peristaltic Pump)	Barnant <input type="checkbox"/>	GeoPump <input type="checkbox"/>	Submersible <input type="checkbox"/>	Other:
Tubing Material:	Silicone <input type="checkbox"/>	Polyethylene <input type="checkbox"/>	Teflon <input type="checkbox"/>	Other:
Sampling Method:	Barnant <input type="checkbox"/>	GeoPump <input type="checkbox"/>	Submersible <input type="checkbox"/>	Other:
Duration of Pumping:	(min)			
Average Pumping Rate:	(ml/min)	Water-Quality Meter Type:	YSI-556 & Hach 2100P	
Total Volume Removed:	(gal)	Did well go dry:	Yes	No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1030											
Rate (mL/min)	—											
Depth to Water (ft.)	—											
pH	8.06											
Temp. (C)	18.75											
Conductivity (mS/cm)	0.611											
Dissolved Oxygen	8.04											
ORP (mV)	11.4											
Turbidity (NTU)	8.75											
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge:

Final Purge:

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover):

Locking Protective Well Cap/Expansion plug:

Well Lock Present? Lock Condition:

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	8	Chloride, Sulfate, & Alkalinity. (250 ml)	4
TSS (1 L Poly)	4	Total Metals (250 ml with HNO ₃)	4
PCBs (Total) (Amber)	8	TDS (250 ml)	4
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS31004</u>		Sample Time: <u>1030</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duplicate ID: <u>TS31005</u>		Dup. Time: <u>—</u>	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Attachment 3C

Groundwater and Surface Water
Sampling Logs – Quarter 3 –
September 2009

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: M. Kohnen
Client / Job Number: B0064539.0000 Task 00500

Well ID: MW-1

Date: 9/22/09

Weather: 80°F, Overcast, Calm

Time In: 1400

Time Out: 1540

Well Information

Depth to Water: (feet) 8.54 (TIC)
Total Depth: (feet) 12.72 (TIC)
Length of Water Column: (feet) 4.18
Volume of Water in Well: (gal) 0.68
Three Well Volumes: (gal) 2.04

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Pump on @ 1420 off @ 1530

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:

Duration of Pumping: (min) 70
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.85 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	8.55	8.55	8.55	8.55	8.55	8.55						
pH	7.50	7.50	7.50	7.50	7.51	7.52						
Temp. (C)	17.00	16.70	16.52	16.46	16.41	16.47						
Conductivity (mS/cm)	0.932	0.931	0.931	0.931	0.930	0.934						
Dissolved Oxygen	0.23	0.21	0.21	0.17	0.15	0.14						
ORP (mV)	-29.1	-34.4	-38.3	-39.9	-41.4	-45.5						
Turbidity (NTU)	11.34	6.20	5.12	4.33	3.42	2.87						
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, No odor

Final Purge: 11 11

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Yes Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID:

TIME:

None

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40042</u>		Sample Time: <u>1455</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: M. Kohagen
Client / Job Number: B0064539.0000 Task 00500

Well ID: MW-2

Date: 9/22/09

Weather: 70°F, Overcast, Calm

Time In: 1100

Time Out: 1155 1230

Well Information

Depth to Water: (feet) 11.76 (TIC)
Total Depth: (feet) 15.10 (TIC)
Length of Water Column: (feet) 3.34
Volume of Water in Well: (gal) 0.54
Three Well Volumes: (gal) 1.62

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Pump and 1105 1210

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:

Duration of Pumping: (min) 65
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.72 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	11.77	11.77	11.77	11.77	11.72	11.77						
pH	7.00	7.13	7.02	7.09	7.11	7.14						
Temp. (C)	16.59	16.56	16.68	16.68	16.56	16.57						
Conductivity (mS/cm)	1.136	1.131	1.133	1.135	1.137	1.138						
Dissolved Oxygen	0.46	0.24	0.29	0.23	0.23	0.25						
ORP (mV)	-94.2	-96.6	-97.1	-98.7	-99.6	-98.8						
Turbidity (NTU)	27.92	4.38	3.64	3.14	2.82	3.17						
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: CLEAR, NO ODOR

Final Purge: " "

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Yes Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40039</u>		Sample Time: <u>1140</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>NA</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>M. Kohagen</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: *S. Harcus*

Well ID: *MW-3*

Client / Job Number: B0064539.0000 Task 00500

Date: *9/22/09*

Weather: *Overcast, foggy - AM hours*

Time In: *0845*

Time Out: *1050*

Well Information

Depth to Water:	(feet)	<i>10.66'</i>	(TIC)
Total Depth:	(feet)	<i>13.75'</i>	(TIC)
Length of Water Column:	(feet)	<i>3.09'</i>	
Volume of Water in Well:	(gal)	<i>0.50</i>	
Three Well Volumes:	(gal)	<i>1.51</i>	

Well Type:	Flushmount	<input type="checkbox"/>	Stick-Up	<input checked="" type="checkbox"/>
Well Material:	Stainless Steel	<input checked="" type="checkbox"/>	PVC	<input type="checkbox"/>
Well Locked:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Measuring Point Marked:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Well Diameter:	1" <input type="checkbox"/>	2" <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>	

Purging Information

Pump on @ 0912

Purging Method: (Peristaltic Pump)	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Tubing Material:	Silicone <input type="checkbox"/>	Polyethylene <input type="checkbox"/>	Teflon <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>
Sampling Method:	Barnant <input type="checkbox"/>	GeoPump <input checked="" type="checkbox"/>	Submersible <input type="checkbox"/>	Other: <input type="checkbox"/>
Duration of Pumping:	(min)	<i>115</i>		
Average Pumping Rate:	(ml/min)	<i>100</i>	Water-Quality Meter Type:	<i>YSI-556 & Hach 2100P</i>
Total Volume Removed:	(gal)	<i>3.04</i>	Did well go dry:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	<i>0922</i>	<i>0927</i>	<i>0932</i>	<i>0937</i>	<i>0942</i>	<i>0947</i>	<i>0952</i>	<i>0957</i>	<i>1002</i>	<i>1007</i>	<i>1012</i>	<i>1017</i>
Rate (mL/min)	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>
Depth to Water (ft.)	<i>10.68'</i>	<i>10.67'</i>	<i>10.68'</i>	<i>10.68'</i>	<i>10.68'</i>	<i>10.68'</i>	<i>10.68'</i>	<i>10.68'</i>	<i>10.67'</i>	<i>10.67'</i>	<i>10.68'</i>	<i>10.67'</i>
pH	<i>6.90</i>	<i>6.99</i>	<i>7.02</i>	<i>7.03</i>	<i>7.04</i>	<i>7.05</i>	<i>7.05</i>	<i>7.05</i>	<i>7.06</i>	<i>7.06</i>	<i>7.07</i>	<i>7.06</i>
Temp. (C)	<i>16.59</i>	<i>16.37</i>	<i>16.34</i>	<i>16.29</i>	<i>16.30</i>	<i>16.32</i>	<i>16.36</i>	<i>16.36</i>	<i>16.41</i>	<i>16.42</i>	<i>16.42</i>	<i>16.43</i>
Conductivity (mS/cm)	<i>1.120</i>	<i>1.121</i>	<i>1.121</i>	<i>1.121</i>	<i>1.121</i>	<i>1.121</i>	<i>1.121</i>	<i>1.122</i>	<i>1.122</i>	<i>1.123</i>	<i>1.123</i>	<i>1.123</i>
Dissolved Oxygen (<i>mg/L</i>)	<i>0.45</i>	<i>0.32</i>	<i>0.25</i>	<i>0.27</i>	<i>0.36</i>	<i>0.43</i>	<i>0.48</i>	<i>0.35</i>	<i>0.32</i>	<i>0.22</i>	<i>0.17</i>	<i>0.19</i>
ORP (mV)	<i>-18.9</i>	<i>-27.7</i>	<i>-22.7</i>	<i>-28.0</i>	<i>-39.2</i>	<i>-44.3</i>	<i>-49.3</i>	<i>-51.4</i>	<i>-52.3</i>	<i>-53.3</i>	<i>-54.5</i>	<i>-55.3</i>
Turbidity (NTU)	<i>54.75</i>	<i>35.72</i>	<i>24.98</i>	<i>18.17</i>	<i>11.43</i>	<i>11.79</i>	<i>7.59</i>	<i>5.91</i>	<i>5.13</i>	<i>4.27</i>	<i>2.23</i>	<i>1.82</i>
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: *Clear, No odor*

Final Purge: *Clear, No odor*

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): *Good.*

Locking Protective Well Cap/expansion plug: *Good.*

Well Lock Present? *Yes.* Lock Condition: *Good.*

Other:

OVERSIGHT SAMPLE ID:

TIME:

*No Oversight Split Sample
@ MW-3*

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: TS40037		Sample Time: 1024	
MS/MSD: Yes <u>No</u>		Duplicate: Yes <u>No</u>	
Duplicate ID: N/A		Dup. Time: N/A.	
Sampled By: S. Harcus		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: M. Kohagen
Client / Job Number: B0064539.0000 Task 00500
Weather: 75°F, Partly Cloudy, Mod Wind

Well ID: MW-4
Date: 9/21/09
Time In: 1500 Time Out: 1655

Well Information

Depth to Water: (feet) 12.22 (TIC)
Total Depth: (feet) 14.44 (TIC)
Length of Water Column: (feet) 2.22
Volume of Water in Well: (gal) 0.36
Three Well Volumes: (gal) 1.09

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Pump on @ 1510 off @ 1645
Purging Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 95
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.51 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.00						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	12.22	12.23	12.23	12.23	12.23	12.23						
pH	6.98	6.88	6.90	6.95	6.98	7.02						
Temp. (C)	18.19	17.90	17.97	17.87	17.95	18.07						
Conductivity (mS/cm)	1.131	1.136	1.134	1.135	1.139	1.140						
Dissolved Oxygen	0.37	0.31	0.28	0.27	0.27	0.25						
ORP (mV)	-61.4	-59.5	-63.1	-68.9	-72.3	-74.4						
Turbidity (NTU)	10.70	4.75	3.31	4.13	3.21	1.66						
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, no odor

Final Purge: 11 11

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Yes Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID:

TIME:

PGW-MW4-01

1545

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2 + 1 CPM	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40035</u>		Sample Time: <u>1545</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MFK</u>		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group - Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: S. HARCUS

Client / Job Number: B0064539.0000 Task 00500

Weather: 70°F, Partly Cloudy, Mod Wind

Well Information

Depth to Water: (feet) 12.03 (TIC)
Total Depth: (feet) 14.23 (TIC)
Length of Water Column: (feet) 2.20
Volume of Water in Well: (gal) 0.36
Three Well Volumes: (gal) 1.08

Well ID: MW-5

Date: 9/21/09

Time In: 1403

Time Out: 1545

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 95
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.51 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
∇ 0.1	∇ 10%	∇ 3.0%	∇ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	4.5	2.0	2.5	3.0	3.5	4.0	4.5				
Rate (mL/min)	100	100	100	100	100	100	100	100				
Depth to Water (ft.)	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04				
pH	6.92	6.96	6.98	7.00	7.02	7.06	7.09	7.10				
Temp. (C)	18.23	18.10	18.01	18.03	18.10	18.20	18.23	18.04				
Conductivity (mS/cm)	1.236	1.228	1.223	1.221	1.219	1.217	1.218	1.217				
Dissolved Oxygen (%)	3.6	2.8	2.2	2.0	1.6	1.4	1.3	1.3				
ORP (mV)	-61.8	-73.3	-81.2	-86.8	-97.2	-104.9	-114.4	-123.9				
Turbidity (NTU)	5.49	6.71	6.19	4.37	2.95	1.93	1.31	0.55				
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, No Odor

Final Purge: Clear, No Odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good.

Well Lock Present? Yes. Lock Condition: Good.

Other:

OVERSIGHT SAMPLE ID:

PGW-MW05-01

TIME:

1503

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2 + 1 CDM	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>PGW-MW05-01</u>		Sample Time: <u>1503</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>S. HARCUS</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: S. Marcus Well ID: MW-6
Client / Job Number: B0064539.0000 Task 00500 Date: 9/22/09
Weather: Overcast, 66°F Time In: 1102 Time Out: 1215

Well Information

Depth to Water: (feet) 11.64' (TIC)
Total Depth: (feet) 15.85' (TIC)
Length of Water Column: (feet) 4.21'
Volume of Water in Well: (gal) 0.69
Three Well Volumes: (gal) 2.06

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 65
Average Pumping Rate: (ml/min) 160 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.72 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.0	1.5	2.0	2.5	3.0	3.5						
Rate (mL/min)	106	100	100	100	100	100						
Depth to Water (ft.)	11.64'	11.64'	11.64'	11.64'	11.64'	11.64'						
pH	7.17	7.18	7.19	7.19	7.19	7.19						
Temp. (C)	15.46	15.33	15.46	15.50	15.46	15.44						
Conductivity (mS/cm)	1.023	1.023	1.024	1.024	1.025	1.025						
Dissolved Oxygen	0.31	0.28	0.27	0.21	0.18	0.17						
ORP (mV)	-84.4	-84.5	-84.4	-84.7	-87.3	-86.9						
Turbidity (NTU)	9.37	6.25	5.79	6.44	5.20	3.19						
Notes:						Stabilized						

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, No Odor

Final Purge: Clear, No Odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good.

Locking Protective Well Cap/expansion plug: Good.

Well Lock Present? Yes. Lock Condition: Good.

Other:

OVERSIGHT SAMPLE ID:

No Oversight Split Sample @ MW-6

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40040</u>		Sample Time: <u>1146</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>S. Marcus</u>		Log Reviewed By: <u>MKE</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: M. KOHAGEN
Client / Job Number: B0064539.0000 Task 00500
Weather: 70°F / Fog / CALM

Well ID: MW-7
Date: 9/22/09
Time In: 0845 Time Out: 1055

Well Information

Depth to Water: (feet) 12.10 (TIC)
Total Depth: (feet) 14.68 (TIC)
Length of Water Column: (feet) 2.58
Volume of Water in Well: (gal) 0.42
Three Well Volumes: (gal) 1.26

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information PUMP ON @ 0855 OFF @ 1040

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 105
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.77 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	0905	0910	0915	0920	0925	0930	0935					
Rate (mL/min)	1.00	1.50	2.00	2.50	3.00	3.50	4.00					
Depth to Water (ft.)	100	100	100	100	100	100	100					
pH	12.10	12.10	12.11	12.11	12.11	12.11	12.11					
Temp. (C)	7.11	7.17	7.18	7.19	7.22	7.22	7.22					
Conductivity (mS/cm)	15.65	15.60	15.48	15.42	15.66	15.60	15.53					
Dissolved Oxygen	1.199	1.155	1.137	1.125	1.110	1.105	1.101					
ORP (mV)	0.40	0.34	0.32	0.27	0.21	0.21	0.21					
Turbidity (NTU)	-56.1	-67.2	-68.4	-58.7	-69.0	-72.3	-75.6					
Notes:	58.33	17.60	11.98	7.74	3.19	2.89	2.75					

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Slt Cloudy, No odor

Final Purge: Clear, No odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good

Locking Protective Well Cap/expansion plug: Good

Well Lock Present? Yes Lock Condition: Good

Other:

OVERSIGHT SAMPLE ID: 01

TIME:

PGW-MW7-03

0935

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2 + 3 CDM	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40038</u>		Sample Time: <u>0935</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>r/a</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>MEK</u>		Log Reviewed By:	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: S. Harcus
Client / Job Number: B0064539.0000 Task 00500
Weather: 70°F, Partly Cloudy, Moderate Wind

Well ID: MW-8
Date: 9/21/0
Time In: 1615 Time Out: 1740

Well Information

Depth to Water: (feet) 10.89' (TIC)
Total Depth: (feet) 18.46' (TIC)
Length of Water Column: (feet) 7.57'
Volume of Water in Well: (gal) 1.23
Three Well Volumes: (gal) 3.69

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 80
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.11 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
∇ 0.1	∇ 10%	∇ 3.0%	∇ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1632	1637	1642	1647	1652	1658	1703	1708	1713			
Rate (mL/min)	100	100	100	100		100	100	100	100			
Depth to Water (ft.)	10.90'	10.90'	10.90'	10.90'		10.90'	10.90'	10.90'	10.90'			
pH	7.22	7.23	7.23	7.31		7.31	7.25	7.26	7.24			
Temp. (C)	16.49	16.63	17.23	17.66		16.36	16.18	16.24	16.25			
Conductivity (mS/cm)	1.100	1.100	1.098	1.103		1.106	1.102	1.102	1.102			
Dissolved Oxygen	2.4	2.9	3.3	2.9		3.7	1.7	1.9	1.8			
ORP (mV)	-91.5	-95.8	-99.0	-90.9		-102.4	-99.0	-100.7	-97.4			
Turbidity (NTU)	15.27	15.76	11.36			6.49	3.23	1.47	0.91			
Notes:						Battery Died	Used Cor Adapter					

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, No Odor

Final Purge: Clear, No Odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good.

Locking Protective Well Cap/expansion plug: Good.

Well Lock Present? Yes. Lock Condition: Good.

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40036</u>		Sample Time: <u>1718</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duplicate ID: <u>N/A</u>		Dup. Time: <u>N/A</u>	
Sampled By: <u>S. Harcus</u>		Log Reviewed By: <u>MKK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: S. Marcus
Client / Job Number: B0064539.0000 Task 00500
Weather: 81°F, Partly Cloudy, Light Wind

Well ID: MW-9
Date: 9/22/09
Time In: 1348 Time Out: 1525

Well Information

Depth to Water: (feet) 15.55' (TIC)
Total Depth: (feet) 19.49' (TIC)
Length of Water Column: (feet) 3.94'
Volume of Water in Well: (gal) 0.64
Three Well Volumes: (gal) 1.92

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 90
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.38 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
∇ 0.1	∇ 10%	∇ 3.0%	∇ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.0	1.5	2.0	2.5	3.0	3.5						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	15.55'	15.56'	15.55'	15.55'	15.55'	15.55'						
pH	7.30	7.27	7.27	7.27	7.27	7.27						
Temp. (C)	15.59	15.52	15.47	15.41	15.36	15.37						
Conductivity (mS/cm)	0.981	0.978	0.977	0.976	0.975	0.974						
Dissolved Oxygen	0.39	0.26	0.24	0.20	0.21	0.23						
ORP (mV)	-83.1	-82.8	-82.7	-83.4	-84.8	-84.4						
Turbidity (NTU)	7.51	5.55	3.92	4.19	3.32	3.26						
Notes:							Stabilized					

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, No Odor
Final Purge: Clear, No odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good
Locking Protective Well Cap/expansion plug: Yes, Good
Well Lock Present? Yes Lock Condition: Good
Other:

OVERSIGHT SAMPLE ID:

PGW-MW9-01

TIME:

1449

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2 + 1 CDM	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40041</u>		Sample Time: <u>1449</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u> </u>		Dup. Time: <u> </u>	
Sampled By: <u>S. Marcus</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: S. Harcus Well ID: MW-10
Client / Job Number: B0064539.0000 Task 00500 Date: 9/23/09
Weather: 77°F, overcast, Mist / Sprinkle Time In: 1100 Time Out: 1300

Well Information

Depth to Water: (feet) 9.38' (TIC)
Total Depth: (feet) 12.45' (TIC)
Length of Water Column: (feet) 3.07'
Volume of Water in Well: (gal) 0.5
Three Well Volumes: (gal) 1.5

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 110
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.91 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	<u>1.1</u>	<u>1.5</u>	<u>2.0</u>	<u>2.5</u>	<u>3.0</u>	<u>3.5</u>						
Rate (mL/min)	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>						
Depth to Water (ft.)	<u>9.39'</u>	<u>9.38'</u>	<u>9.38'</u>	<u>9.39'</u>	<u>9.38'</u>	<u>9.38'</u>						
pH	<u>7.04</u>	<u>7.04</u>	<u>7.04</u>	<u>7.04</u>	<u>7.04</u>	<u>7.05</u>						
Temp. (C)	<u>17.08</u>	<u>17.10</u>	<u>16.95</u>	<u>16.94</u>	<u>16.90</u>	<u>16.87</u>						
Conductivity (mS/cm)	<u>1.332</u>	<u>1.317</u>	<u>1.308</u>	<u>1.304</u>	<u>1.302</u>	<u>1.298</u>						
Dissolved Oxygen	<u>0.60</u>	<u>0.26</u>	<u>0.26</u>	<u>0.23</u>	<u>0.22</u>	<u>0.22</u>						
ORP (mV)	<u>-80.4</u>	<u>-84.5</u>	<u>-86.8</u>	<u>-85.9</u>	<u>-74.1</u>	<u>-77.0</u>						
Turbidity (NTU)	<u>14.18</u>	<u>9.73</u>	<u>5.47</u>	<u>3.73</u>	<u>2.56</u>	<u>2.49</u>						
Notes:							<u>Stabilized</u>					

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, No odor

Final Purge: Clear, No odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good.

Locking Protective Well Cap/expansion plug: Good.

Well Lock Present? Yes. Lock Condition: Good.

Other:

OVERSIGHT SAMPLE ID: No oversight sample for MW-10 TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	<u>4</u>	Chloride, Sulfate, & Alkalinity (250 ml)	<u>2</u>
TSS (1 L Poly)	<u>2</u>	Total Metals (250 ml with HNO ₃)	<u>2</u>
PCBs (Total) (Amber)	<u>4</u>	TDS (250 ml)	<u>2</u>
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40046</u>		Sample Time: <u>1148</u>	
MS/MSD: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Duplicate: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Duplicate ID: <u>TS40047</u>		Dup. Time: <u>1218</u>	
Sampled By: <u>S. Harcus</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: **M. KOHAGEN**

Well ID: **MW-11**

Client / Job Number: **B0064539.0000 Task 00500**

Date: **9/23/09**

Weather: **70°F, OVERCAST, LT WIND**

Time In: **0900**

Time Out: **1140**

Well Information

Depth to Water: (feet) **8.38** (TIC)
Total Depth: (feet) **12.95** (TIC)
Length of Water Column: (feet) **4.57**
Volume of Water in Well: (gal) **0.75**
Three Well Volumes: (gal) **2.25**

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information **PUMP ON @ 0910**

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) **100**
Average Pumping Rate: (ml/min) **100** Water-Quality Meter Type: **YSI-556 & Hach 2100P**
Total Volume Removed: (gal) **10 L** Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.00	1.50	2.00	2.50	3.00	3.50						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	8.38	8.38	8.38	8.38	8.38	8.38						
pH	7.10	7.14	7.19	7.16	7.20	7.22						
Temp. (C)	15.57	15.56	15.51	15.48	15.43	15.48						
Conductivity (mS/cm)	0.964	0.923	0.916	0.905	0.900	0.894						
Dissolved Oxygen	0.30	0.34	0.27	0.22	0.20	0.21						
ORP (mV)	-79.5	-72.0	-67.3	-62.0	-63.4	-61.8						
Turbidity (NTU)	7.49	5.34	4.10	2.42	1.91	1.48						
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: **CLEAR, NO ODOR**

Final Purge: **CLEAR, NO ODOR**

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): **Good**

Locking Protective Well Cap/expansion plug: **Good**

Well Lock Present? **YES** Lock Condition: **Good**

Other:

OVERSIGHT SAMPLE ID:

PGW-MW11-01

TIME:

0945

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	4 2	Chloride, Sulfate, & Alkalinity. (250 ml)	2
TSS (1 L Poly)	2 1	Total Metals (250 ml with HNO ₃)	2
PCBs (Total) (Amber)	4	TDS (250 ml)	2
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS 0945			
Sample ID: TS40044		Sample Time: 0945	
MS/MSD: Yes No		Duplicate: Yes No	
Duplicate ID: TS40045		Dup. Time: —	
Sampled By: M. Kohagen		Log Reviewed By: MFK	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: S. Marcus
Client / Job Number: B0064539.0000 Task 00500

Well ID: MW-12
Date: 9/23/09
Time In: 0830 Time Out: 1010

Weather:

Well Information

Depth to Water: (feet) 10.14' (TIC)
Total Depth: (feet) 11.98' (TIC)
Length of Water Column: (feet) 1.84'
Volume of Water in Well: (gal) 0.30
Three Well Volumes: (gal) 0.90

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Pump on @ 0841

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 85
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 2.25 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	<u>~1.0</u>	<u>~1.5</u>	<u>2.0</u>	<u>2.5</u>	<u>3.0</u>	<u>3.5</u>						
Rate (mL/min)	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>						
Depth to Water (ft.)	<u>10.25</u>	<u>10.25</u>	<u>10.25</u>	<u>10.25</u>	<u>10.25</u>	<u>10.25</u>						
pH	<u>6.94</u>	<u>6.97</u>	<u>7.00</u>	<u>7.01</u>	<u>7.02</u>	<u>7.02</u>						
Temp. (C)	<u>17.60</u>	<u>17.56</u>	<u>17.95</u>	<u>17.51</u>	<u>17.54</u>	<u>17.52</u>						
Conductivity (mS/cm)	<u>0.838</u>	<u>0.828</u>	<u>0.821</u>	<u>0.819</u>	<u>0.818</u>	<u>0.818</u>						
Dissolved Oxygen	<u>0.33</u>	<u>0.33</u>	<u>0.31</u>	<u>0.27</u>	<u>0.28</u>	<u>0.27</u>						
ORP (mV)	<u>-50.6</u>	<u>-46.9</u>	<u>-44.4</u>	<u>-42.5</u>	<u>-39.8</u>	<u>-38.9</u>						
Turbidity (NTU)	<u>2.15</u>	<u>1.40</u>	<u>1.29</u>	<u>0.96</u>	<u>0.65</u>	<u>1.02</u>						
Notes:						<u>Table</u>						

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, No odor

Final Purge: Clear, No odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Good.

Locking Protective Well Cap/expansion plug: Yes. Good.

Well Lock Present? Yes. Lock Condition: Good.

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: TS40043		Sample Time: 0933	
MS/MSD: (Yes) No		Duplicate: Yes (No)	
Duplicate ID: N/A		Dup. Time: ←	
Sampled By: S. Marcus		Log Reviewed By: MKK	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: M. Kohagen, J. BENDER

Well ID: MW-13

Client / Job Number: B0064539-0000 Task 00500

Date: 9/23/09

Weather: 75°F, overcast, calm

Time In: 1200

Time Out: 1323

Well Information

Depth to Water: (feet) 10.07 (TIC)
Total Depth: (feet) 15.00 (TIC)
Length of Water Column: (feet) 4.93
Volume of Water in Well: (gal) 0.80
Three Well Volumes: (gal) 2.40

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other: _____

Purging Information

Pump on @ 1210

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other: _____
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other: _____
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other: _____

Duration of Pumping: (min) 75
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.98 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1	1.5	2.0	2.5	3.0	3.5						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	10.09	10.09	10.09	10.09	10.09	10.09						
pH	7.68	7.64	7.65	7.68	7.69	7.68						
Temp. (C)	15.87	16.02	15.90	15.78	15.70	15.71						
Conductivity (mS/cm)	.841	.851	.856	.857	.854	.857						
Dissolved Oxygen	.52	.43	.33	.23	.21	.20						
ORP (mV)	-93.4	-92.4	-96.9	-98.9	-99.4	-97.1						
Turbidity (NTU)	4.85	3.40	3.48	2.40	2.40	2.38						
Notes:						Stabilized						

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: Clear, No odor

Final Purge: Clear, No odor

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): New

Locking Protective Well Cap/expansion plug: yes, New

Well Lock Present? Yes Lock Condition: New

Other: _____

OVERSIGHT SAMPLE ID:

PGW-MW13-01

TIME:

1250

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS40048</u>		Sample Time: <u>1250</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>—</u>		Dup. Time: <u>—</u>	
Sampled By: <u>M. Kohagen</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under EOC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: S. Marcus

Well ID: MW-14

Client / Job Number: B0064539.0000 Task 00500

Date: 9/24/09

Weather: 68°F, Sunny

Time In: 1045

Time Out: 1210

Well Information

Depth to Water: (feet) 7.79' (TIC)
Total Depth: (feet) 11.60' (TIC)
Length of Water Column: (feet) 3.81'
Volume of Water in Well: (gal) 0.62
Three Well Volumes: (gal) 1.86

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Duration of Pumping: (min) 65
Average Pumping Rate: (ml/min) 100 Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) 1.71 Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1.0	1.5	2.0	2.5	3.0	3.5	4.0					
Rate (mL/min)	100	100	100	100	100	100	100					
Depth to Water (ft.)	7.79	7.79	7.79	7.79	7.79	7.79	7.79					
pH	7.05	7.05	7.05	7.05	7.06	7.06	7.06					
Temp. (C)	15.29	15.20	15.16	15.12	15.14	15.13	15.09					
Conductivity (mS/cm)	0.867	0.868	0.870	0.870	0.871	0.871	0.871					
Dissolved Oxygen	0.40	0.47	0.48	0.44	0.28	0.16	0.16					
ORP (mV)	-76.8	-79.8	-80.8	-82.0	-80.8	-81.4	-82.3					
Turbidity (NTU)	3.93	4.64	2.60	1.73	3.94	3.79	2.59					
Notes:							Stable					

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: No Color, No Odor, No Turbidity

Final Purge: No Color, No Odor, No Turbidity

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): Excellent

Locking Protective Well Cap/expansion plug: Yes, Good.

Well Lock Present? Yes, Lock Condition: New, Good

Other: —

OVERSIGHT SAMPLE ID:

PGW-MW14-01

TIME:

1141

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	2	Chloride, Sulfate, & Alkalinity. (250 ml)	1
TSS (1 L Poly)	1	Total Metals (250 ml with HNO ₃)	1
PCBs (Total) (Amber)	2 + 1 CDM	TDS (250 ml)	1
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: T540050		Sample Time: 1141	
MS/MSD: Yes <input checked="" type="radio"/> No <input type="radio"/>		Duplicate: Yes <input type="radio"/> No <input checked="" type="radio"/>	
Duplicate ID: —		Dup. Time: —	
Sampled By: S. Hareus		Log Reviewed By: MFK	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel:

S. Harcus / J. Bender

Client / Job Number:

B0064539.0000 Task 00500

Well ID:

MW-15

Date:

9/23/09

Weather:

66°F, Sunny

Time In:

0940

Time Out:

1140

Well Information

Depth to Water: (feet) *8.89'* (TIC)
Total Depth: (feet) *14.50'* (TIC)
Length of Water Column: (feet) *5.61'*
Volume of Water in Well: (gal) *0.91*
Three Well Volumes: (gal) *2.73*

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☒ No ☐
Measuring Point Marked: Yes ☒ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Pump on @ 0955

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☒ Submersible ☐ Other:
Tubing Material: Silicone ☒ Polyethylene ☐ Teflon ☒ Other:
Sampling Method: Barnant ☐ GeoPump ☒ Submersible ☐ Other:

Duration of Pumping: (min) *160*
Average Pumping Rate: (ml/min) *100* Water-Quality Meter Type: *YSI-556 & Hach 2100P*
Total Volume Removed: (gal) *2.64* Did well go dry: Yes ☐ No ☒

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1010	1015	1020	1025	1030	1035	7	8	9	10	11	12
Volume Purged (L)	1.0	1.5	2.0	2.5	3.0	3.5						
Rate (mL/min)	100	100	100	100	100	100						
Depth to Water (ft.)	8.89	8.89	8.89	8.89	8.84	8.89						
pH	7.06	7.06	7.06	7.06	7.07	7.07						
Temp. (C)	14.74	14.67	14.63	14.62	14.62	14.63						
Conductivity (mS/cm)	1.165	1.159	1.151	1.143	1.141	1.141						
Dissolved Oxygen	0.26	0.24	0.24	0.17	0.16	0.16						
ORP (mV)	-77.6	-80.7	-80.8	-82.1	-82.6	-82.6						
Turbidity (NTU)	8.44	8.50	5.35	2.38	1.87	0.80						
Notes:						Stall						

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: *Clear, No Odor*

Final Purge: *Clear, No Odor*

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover): *New*

Locking Protective Well Cap/expansion plug: *Yes, New*

Well Lock Present? *Yes* Lock Condition: *Good.*

Other:

OVERSIGHT SAMPLE ID:

PGW-MW15-01

TIME:

1040

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	<i>2</i>	Chloride, Sulfate, & Alkalinity. (250 ml)	<i>1</i>
TSS (1 L Poly)	<i>1</i>	Total Metals (250 ml with HNO ₃)	<i>1</i>
PCBs (Total) (Amber)	<i>2 + 1 CDM</i>	TDS (250 ml)	<i>1</i>
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID:	<i>TS40049</i>	Sample Time:	<i>1040</i>
MS/MSD:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Duplicate:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Duplicate ID:	—	Dup. Time:	—
Sampled By:	<i>S. Harcus</i>	Log Reviewed By:	<i>MFK</i>
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

**SW SAMPLE @
SG-5**

Sampling Personnel: **M. Kohnen**
Client / Job Number: **B0064539.0000 Task 00500**

Well ID: **SG-5**
Date: **9/21/09**
Time In: **1420** Time Out: **1450**

Weather: **70° F, Partly Cloudy**

Well Information

Depth to Water: (feet) **(TIC)**
Total Depth: (feet) **(TIC)**
Length of Water Column: (feet)
Volume of Water in Well: (gal)
Three Well Volumes: (gal)

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☐ No ☐
Measuring Point Marked: Yes ☐ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: (Peristaltic Pump) Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☐ Other:
Sampling Method: Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Duration of Pumping: (min)
Average Pumping Rate: (ml/min) Water-Quality Meter Type: **YSI-556 & Hach 2100P**
Total Volume Removed: (gal) Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
∇ 0.1	∇ 10%	∇ 3.0%	∇ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	1430											
Rate (mL/min)												
Depth to Water (ft.)												
pH	8.41											
Temp. (C)	19.95											
Conductivity (mS/cm)	0.729											
Dissolved Oxygen	10.60											
ORP (mV)	210.0											
Turbidity (NTU)	33.31											
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: **CLEAR, NO ODOR**

Final Purge: **CLEAR, NO ODOR**

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover):

Locking Protective Well Cap/expansion plug:

Well Lock Present? Lock Condition:

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	6	Chloride, Sulfate, & Alkalinity (250 ml)	3
TSS (1 L Poly)	3	Total Metals (250 ml with HNO ₃)	3
PCBs (Total) (Amber)	6	TDS (250 ml)	3
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: T531006		Sample Time: 1430	
MS/MSD: Yes No		Duplicate: Yes NO	
Duplicate ID: N/A		Dup. Time: —	
Sampled By: MEK		Log Reviewed By: MEK	
All samples submitted under COC to TAL of South Burlington, Vermont.			

**Kalamazoo River Study
Group – Plainwell TCRA,
Plainwell, Michigan**

GROUNDWATER SAMPLING LOG

Fall 2009 EVENT

Sampling Personnel: M. KOHAGEN

Well ID: SW @ SG-5

Client / Job Number: B0064539.0000 Task 00500

Date: 9/24/09

Weather: 65°F, PARTLY CLOUDY, LT WIND

Time In: 1345

Time Out: 1415

Well Information

Depth to Water: (feet) (TIC)
Total Depth: (feet) (TIC)
Length of Water Column: (feet)
Volume of Water in Well: (gal)
Three Well Volumes: (gal)

Well Type: Flushmount ☐ Stick-Up ☒
Well Material: Stainless Steel ☒ PVC ☐
Well Locked: Yes ☐ No ☐
Measuring Point Marked: Yes ☐ No ☐
Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Tubing Material: Silicone ☐ Polyethylene ☐ Teflon ☐ Other:
Sampling Method: Barnant ☐ GeoPump ☐ Submersible ☐ Other:
Duration of Pumping: (min)
Average Pumping Rate: (ml/min) Water-Quality Meter Type: YSI-556 & Hach 2100P
Total Volume Removed: (gal) Did well go dry: Yes ☐ No ☐

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability, WITH TURBIDITY <5 NTU			
pH	DO	Cond.	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Time:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (L)	<u>1400</u>											
Rate (mL/min)	<u>1</u>											
Depth to Water (ft.)	<u>1</u>											
pH	<u>8.26</u>											
Temp. (C)	<u>19.83</u>											
Conductivity (mS/cm)	<u>0.781</u>											
Dissolved Oxygen	<u>9.50</u>											
ORP (mV)	<u>259.3</u>											
Turbidity (NTU)	<u>5.6</u>											
Notes:												

Purge Water Description (Color? Odor? Turbid? Other?)

Initial Purge: CLEAR, NO ODOOR

Final Purge: CLEAR, NO ODOOR

Well Integrity Information

Surface Seal Condition (concrete pad, bolts, manhole cover):

Locking Protective Well Cap/expansion plug:

Well Lock Present? Lock Condition:

Other:

OVERSIGHT SAMPLE ID:

TIME:

Analyses	# of Containers	Analyses	# of Containers
TOCs (40 ml with H ₂ SO ₄)	<u>4</u>	Chloride, Sulfate, & Alkalinity (250 ml)	<u>2</u>
TSS (1 L Poly)	<u>2</u>	Total Metals (250 ml with HNO ₃)	<u>2</u>
PCBs (Total) (Amber)	<u>4</u>	TDS (250 ml)	<u>2</u>
INCLUDE OVERSIGHT SPLIT IN AMOUNT TOTALS			
Sample ID: <u>TS31007</u>		Sample Time: <u>1400</u>	
MS/MSD: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Duplicate: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Duplicate ID: <u>TS31008</u>		Dup. Time: <u>—</u>	
Sampled By: <u>MFK</u>		Log Reviewed By: <u>MFK</u>	
All samples submitted under COC to TAL of South Burlington, Vermont.			

Attachment 4

Validation Packages

Kalamazoo River Superfund Site Former Plainwell Impoundment Groundwater Sampling

Data Review

PLAINWELL, MICHIGAN

PCB, Metals and Miscellaneous Analyses

SDG# KAL459

Analyses Performed By:
TestAmerica Laboratories
Burlington, Vermont

Report: # 10202R
Review Level: Tier III
Project: B0064539.0000.00500

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #KAL459 for samples collected in association with the Plainwell site. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	PCB	MET	MISC
TS31000	792624	Ground Water	4/13/2009				X	X	X
TS40000	792625	Ground Water	4/13/2009				X	X	X
TS40001	792626	Ground Water	4/13/2009				X	X	X
TS40002	792627	Ground Water	4/14/2009				X	X	X
TS40003	792628	Ground Water	4/14/2009	TS40002			X	X	X
TS40004	792629	Ground Water	4/14/2009				X	X	X
TS40005	792630	Ground Water	4/14/2009				X	X	X
TS40006	792631	Ground Water	4/14/2009				X	X	X
TS40007	792937	Ground Water	4/15/2009				X	X	X
TS40008	792938	Ground Water	4/15/2009				X	X	X
TS40009	792939	Ground Water	4/15/2009				X	X	X
TS40010	792940	Ground Water	4/15/2009				X	X	X
TS40011	792941	Ground Water	4/15/2009				X	X	X
TS40012	792942	Ground Water	4/16/2009				X	X	X
TS40013	792943	Ground Water	4/16/2009				X	X	X
TS40014	792944	Ground Water	4/16/2009				X	X	X
TS40015	792945	Ground Water	4/16/2009	TS40014			X	X	X
TS40016	792962	Ground Water	4/17/2009				X	X	X
TS31001	792963	Ground Water	4/17/2009				X	X	X
TS31002	792964	Ground Water	4/17/2009	TS31001			X	X	X

Note:

1. Miscellaneous parameters include total organic carbon (TOC), total suspended solids (TSS), total dissolved solids (TDS), chloride, sulfate, and alkalinity.
2. Matrix spike/matrix spike duplicate/laboratory duplicate was performed on sample locations TS31001 and TS40013.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to (United States Environmental Protection Agency) USEPA Method 8082. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999 and USEPA Region II (SOP HW-45, Revision 1).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
 - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
 - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
 - UB Compound considered non-detect at the listed value due to associated blank contamination.
 - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
 - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in this package has been derived using a procedure developed by TestAmerica as an attempt to improve the analytical process of calibration, identification and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear. While significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to straighten the curve and allow the use of response factors for calibration purposes.

During the initial calibration, a response factor is calculated for each peak in the individual Aroclors. A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of false positive and false negative peak identifications.

The determination of which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Silvon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which is less likely to be affected by interferences. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. System Performance

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

A maximum RSD of 20% is allowed or a correlation coefficient greater than 0.99. Multiple-point calibrations were performed for all Aroclors.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (15%).

All calibration criteria were within the control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires the surrogate compounds must exhibited recoveries within the method established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
TS40001 TS40004	Tetrachloro-m-xylene	< LL but > 10%
	Decachlorobiphenyl	AC

Lower control limit (LL)

Acceptable (AC)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
One surrogate exhibiting recovery outside the control limits but > 10%	Non-detect	No Action
	Detect	
Surrogates diluted below the calibration curve due to the high concentration of a target compound.	Non-detect	J ¹
	Detect	

¹ A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the method established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the method established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

7. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the method established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

8. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS40002/TS40003	All Aroclors	0.048 U	0.049 U	AC
TS40014/TS40015	All Aroclors	0.048 U	0.048 U	AC
TS31001/TS31002	Aroclor 1242	0.027 J	0.048 U	AC

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

9. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

All identified compounds met the specified criteria.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs; SW846 8082	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
GAS CHROMATOGRAPHY (GC/FID)						
Tier II Validation						
Holding times		X		X		
Reporting limits (units)		X		X		
Blanks						
A. Method blanks		X		X		
B. Field blanks		X		X		
Laboratory Control Sample (LCS) %R		X		X		
Laboratory Control Sample Duplicate(LCSD) %R					X	
LCS/LCSD Precision (RPD)					X	
Matrix Spike (MS) %R		X		X		
Matrix Spike Duplicate(MSD) %R		X		X		
MS/MSD Precision (RPD)		X		X		
Field Duplicate (RPD)		X		X		
Surrogate Spike Recoveries		X	X			
Dilution Factor		X		X		
Moisture Content		X		X		
Tier III Validation						
Initial calibration %RSDs		X		X		
Continuing calibration %Ds		X		X		
System performance and column resolution		X		X		
Compound identification and quantitation						
A. Quantitation Reports		X		X		
B. RT of sample compounds within the established RT windows		X		X		
C. Pattern identification		X		X		
D. Transcription/calculation errors present				X		
E. Reporting limits adjusted to reflect sample dilutions		X		X		

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010B, 9060, 300.0, 310.1 and SM2540. Data were reviewed in accordance with USEPA National Functional Guidelines of October 2004.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

- U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
- B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

- Quantitation (Q) Qualifiers

- E The reported value is estimated due to the presence of interference.
- N Spiked sample recovery is not within control limits.
- * Duplicate analysis is not within control limits.

- Validation Qualifiers

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- UB Analyte considered non-detect at the listed value due to associated blank contamination.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010B	Water	180 days from collection to analysis	Cooled @ 4 °C; preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cooled @ 4 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the instrument detection limit (IDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the IDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All continuing calibration verification standard recoveries were within the control limit.

3.2 CRDL Check Standard

The CRDL check standard serves to verify the linearity of calibration of the analysis at the CRDL. The CRDL standard is not required for the analysis of aluminum (Al), barium (Ba), calcium (Ca), iron (Fe), magnesium (Mg), sodium (Na), and potassium (K). The criteria used to evaluate the CRDL standard

analysis are presented below in the CRDL standards evaluation table.

All CRDL standard recoveries were within control limits.

3.3 ICP Interference Control Sample (ICS)

The ICS verifies the laboratories interelement and background correction factors.

All ICS exhibited recoveries within the control limits.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory qualifier "N" will be removed.

The MS analysis performed on sample locations TS40013 and TS31001 exhibited recoveries within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The laboratory duplicate sample results exhibited RPD within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS40002/TS40003	Calcium	110000	109000	0.9%
	Magnesium	27300	27300	0%
	Potsassium	1930	1760	AC
	Sodium	59700	59200	0.8%
TS40014/TS40015	Calcium	121000	129000	6.4%
	Magnesium	36300	38600	6.1%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS31001/TS31002	Potsassium	3100	3220	AC
	Sodium	30000	31500	4.8%
	Calcium	75500	74300	1.6%
	Magnesium	20600	20300	AC
	Potsassium	2040	2050	AC
	Sodium	22400	22200	AC

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

The serial dilution performed on sample locations TS40013 and TS31001 exhibited %D within the control limit.

8. Furnace Analysis QC

No furnace analyses were performed on the samples.

9. Method of Standard Additions (MSA)

No samples were analyzed following the method of standard additions.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW-846 6000/7000	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP)						
Atomic Absorption – Manual Cold Vapor (CV)						
Tier II Validation						
Holding Times		X		X		
Reporting limits (units)		X		X		
Blanks						
A. Instrument Blanks		X		X		
B. Method Blanks		X		X		
C. Equipment/Field Blanks		X		X		
Laboratory Control Sample (LCS)		X		X		
Matrix Spike (MS) %R		X		X		
Matrix Spike Duplicate (MSD) %R		X		X		
MS/MSD Precision (RPD)		X		X		
Field/Lab Duplicate (RPD)		X		X		
ICP Serial Dilution		X		X		
Reporting Limit Verification		X		X		
Raw Data		X		X		
Tier III Validation						
Initial Calibration Verification		X		X		
Continuing Calibration Verification		X		X		
CRDL Standard		X		X		
ICP Interference Check		X		X		
Transcription/calculation errors present		X		X		
Reporting limits adjusted to reflect sample dilutions		X		X		

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Total Organic Carbon by EPA 9060	Water	28 days from collection to analysis	Cooled @ 4 °C; preserved to a pH of less than 2.
Total Dissolved Solids By EPA 160.1	Water	7 days from collection to analysis	Cooled @ 4 °C.
Total Suspended Solids By EPA 160.2	Water	7 days from collection to analysis	Cooled @ 4 °C.
Chloride by EPA 300.0	Water	28 days from collection to analysis	Cooled @ 4 °C.
Sulfate by EPA 300.0	Water	28 days from collection to analysis	Cooled @ 4 °C.
Alkalinity by EPA 310.1	Water	14 days from collection to analysis	Cooled @ 4 °C.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL. No qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory qualifier "N" will be removed.

The MS analysis performed on sample locations TS40013 and TS31001 exhibited recoveries within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The laboratory duplicate sample results exhibited a RPD within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS40002/TS40003	TOC	4.5	4.5	AC
	TDS	619	610	1.4%
	TSS	13.6	14.2	4.3%
	Chloride	100	98	2.0%
	Sulfate	64	66	3.0%
	Alkalinity	310	300	3.2%
TS40014/TS40015	TOC	7.4	7.5	1.3%
	TDS	667	691	3.5%
	TSS	15.4	14.5	6.0%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Chloride	44	43	2.2%
	Sulfate	180	180	0%
	Alkalinity	320	310	3.1%
TS31001/TS31002	TOC	7.1	7.5	5.4%
	TDS	371	370	0.2%
	TSS	7.7	8	3.8%
	Chloride	43	43	0%
	Sulfate	34	34	0%
	Alkalinity	210	210	0%

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA Lloyd Kahn	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Field blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Lab/Field Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Raw Data		X		X	
Transcription/calculation errors present				X	
Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

VALIDATION PERFORMED

BY:

Jeffrey L. Davin

SIGNATURE:



DATE: May 20, 2009

PEER REVIEW: Dennis Capria

DATE: May 27, 2009

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**

AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS31000

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792624

Phase Weight: 1040. (mL)

Date Received: 04/15/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/16/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40000

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792625

Phase Weight: 1020. (mL)

Date Received: 04/15/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/16/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40001

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792626

Phase Weight: 1060. (mL)

Date Received: 04/15/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/16/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40002

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792627

Phase Weight: 1040. (mL)

Date Received: 04/15/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/16/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40003

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792628

Phase Weight: 1020. (mL)

Date Received: 04/15/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/16/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40004

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792629

Phase Weight: 1040. (mL)

Date Received: 04/15/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/16/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40005

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792630

Phase Weight: 1010. (mL)

Date Received: 04/15/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/16/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40006

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792631

Phase Weight: 1060. (mL)

Date Received: 04/15/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/16/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40007

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792937

Phase Weight: 1030. (mL)

Date Received: 04/17/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40008

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792938

Phase Weight: 1060. (mL)

Date Received: 04/17/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40009

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792939

Phase Weight: 1030. (mL)

Date Received: 04/17/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40010

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792940

Phase Weight: 1040. (mL)

Date Received: 04/17/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40011

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792941

Phase Weight: 1030. (mL)

Date Received: 04/17/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40012

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792942

Phase Weight: 1040. (mL)

Date Received: 04/17/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40013

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792943

Phase Weight: 1055. (mL)

Date Received: 04/17/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40014

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792944

Phase Weight: 1040. (mL)

Date Received: 04/17/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40015

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792945

Phase Weight: 1035. (mL)

Date Received: 04/17/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40016

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792962

Phase Weight: 1040. (mL)

Date Received: 04/18/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS31001

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792963

Phase Weight: 1045. (mL)

Date Received: 04/18/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.027	J
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS31002

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL459

Phase Type: WATER

Lab Sample ID: 792964

Phase Weight: 1040. (mL)

Date Received: 04/18/09

Injection Volume: 1.0 (uL)

Date Extracted: 04/20/09

Dilution Factor: 1.0

Date Analyzed: 05/05/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS31000

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792624
Level (low/med): LOW Date Received: 04/15/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	73300			P
7439-95-4	Magnesium	19600			P
7440-23-5	Sodium	20400			P
7440-09-7	Potassium	2090	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS31001

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792963
Level (low/med): LOW Date Received: 04/18/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	75500			P
7439-95-4	Magnesium	20600			P
7440-23-5	Sodium	22400			P
7440-09-7	Potassium	2040	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS31002

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792964
Level (low/med): LOW Date Received: 04/18/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	74300			P
7439-95-4	Magnesium	20300			P
7440-23-5	Sodium	22200			P
7440-09-7	Potassium	2050	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40000

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792625
Level (low/med): LOW Date Received: 04/15/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	152000			P
7439-95-4	Magnesium	27700			P
7440-23-5	Sodium	11600			P
7440-09-7	Potassium	3450	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40001

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792626
Level (low/med): LOW Date Received: 04/15/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	111000			P
7439-95-4	Magnesium	23800			P
7440-23-5	Sodium	27000			P
7440-09-7	Potassium	699	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40002

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792627
Level (low/med): LOW Date Received: 04/15/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	110000			P
7439-95-4	Magnesium	27300			P
7440-23-5	Sodium	59700			P
7440-09-7	Potassium	1930	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40003

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792628
Level (low/med): LOW Date Received: 04/15/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	109000			P
7439-95-4	Magnesium	27300			P
7440-23-5	Sodium	59200			P
7440-09-7	Potassium	1760	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40004

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792629
Level (low/med): LOW Date Received: 04/15/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	92200			P
7439-95-4	Magnesium	21700			P
7440-23-5	Sodium	69500			P
7440-09-7	Potassium	1600	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40005

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792630
Level (low/med): LOW Date Received: 04/15/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	198000			P
7439-95-4	Magnesium	29500			P
7440-23-5	Sodium	51100			P
7440-09-7	Potassium	1120	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40006

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792631
Level (low/med): LOW Date Received: 04/15/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	92200			P
7439-95-4	Magnesium	25700			P
7440-23-5	Sodium	42100			P
7440-09-7	Potassium	1540	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40007

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792937
Level (low/med): LOW Date Received: 04/17/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	115000			P
7439-95-4	Magnesium	27700			P
7440-23-5	Sodium	73400			P
7440-09-7	Potassium	2120	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40008

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792938
Level (low/med): LOW Date Received: 04/17/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	141000			P
7439-95-4	Magnesium	32100			P
7440-23-5	Sodium	53800			P
7440-09-7	Potassium	2810	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40009

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792939
Level (low/med): LOW Date Received: 04/17/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	105000			P
7439-95-4	Magnesium	27100			P
7440-23-5	Sodium	80300			P
7440-09-7	Potassium	2100	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40010

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792940
Level (low/med): LOW Date Received: 04/17/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	121000			P
7439-95-4	Magnesium	29500			P
7440-23-5	Sodium	74900			P
7440-09-7	Potassium	1880	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40011

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792941
Level (low/med): LOW Date Received: 04/17/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	174000			P
7439-95-4	Magnesium	28300			P
7440-23-5	Sodium	55200			P
7440-09-7	Potassium	2000	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40012

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792942
Level (low/med): LOW Date Received: 04/17/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	142000			P
7439-95-4	Magnesium	29300			P
7440-23-5	Sodium	53000			P
7440-09-7	Potassium	1700	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40013

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792943
Level (low/med): LOW Date Received: 04/17/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	119000			P
7439-95-4	Magnesium	27800			P
7440-23-5	Sodium	68400			P
7440-09-7	Potassium	1940	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40014

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792944
Level (low/med): LOW Date Received: 04/17/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	121000			P
7439-95-4	Magnesium	36300			P
7440-23-5	Sodium	30000			P
7440-09-7	Potassium	3100	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40015

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792945
Level (low/med): LOW Date Received: 04/17/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	129000			P
7439-95-4	Magnesium	38600			P
7440-23-5	Sodium	31500			P
7440-09-7	Potassium	3220	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40016

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL459
Matrix (soil/water): WATER Lab Sample ID: 792962
Level (low/med): LOW Date Received: 04/18/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	92100			P
7439-95-4	Magnesium	24600			P
7440-23-5	Sodium	70900			P
7440-09-7	Potassium	2000	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS31000

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792624

Matrix: WATER

Client: BBLKAL

Date Received: 04/15/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	361	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	7.6	
5310	Organic Carbon, Total	04/17/09	BLKTO041709A	mg/L	1	1.0	7.9	

Sample Report Summary

TS40000

SDG No.: KAL459

Lab Sample ID: 792625

Date Received: 04/15/09

[illegible]

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40001

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792626

Matrix: WATER

Client: BBLKAL

Date Received: 04/15/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	553	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	17.0	
5310	Organic Carbon, Total	04/17/09	BLKTO041709A	mg/L	1	1.0	5.2	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40002

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792627

Matrix: WATER

Client: BBLKAL

Date Received: 04/15/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	619	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	13.6	
5310	Organic Carbon, Total	04/17/09	BLKTO041709A	mg/L	1	1.0	4.5	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40003

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792628

Matrix: WATER

Client: BBLKAL

Date Received: 04/15/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	610	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	14.2	
5310	Organic Carbon, Total	04/17/09	BLKTO041709A	mg/L	1	1.0	4.5	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40004

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792629

Matrix: WATER

Client: BBLKAL

Date Received: 04/15/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	568	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	13.3	
5310	Organic Carbon, Total	04/17/09	BLKTO041709A	mg/L	1	1.0	2.5	

WET CHEMISTRY

Sample Report Summary

Client Sample No. _____

TS40005

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792630

Matrix: WATER

Client: BBLKAL

Date Received: 04/15/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	918	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	25.4	
5310	Organic Carbon, Total	04/22/09	BLKTO042209B	mg/L	1	1.0	16.2	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40006

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792631

Matrix: WATER

Client: BBLKAL

Date Received: 04/15/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	495	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	10.1	
5310	Organic Carbon, Total	04/17/09	BLKTO041709A	mg/L	1	1.0	3.1	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40007

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792937

Matrix: WATER

Client: BBLKAL

Date Received: 04/17/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	655	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	11.7	
5310	Organic Carbon, Total	04/22/09	BLKTO042209A	mg/L	1	1.0	4.8	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40008

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792938

Matrix: WATER

Client: BBLKAL

Date Received: 04/17/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	746	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	8.9	
5310	Organic Carbon, Total	04/22/09	BLKTO042209A	mg/L	1	1.0	6.7	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40009

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792939

Matrix: WATER

Client: BBLKAL

Date Received: 04/17/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	625	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	9.1	
5310	Organic Carbon, Total	04/22/09	BLKTO042209A	mg/L	1	1.0	2.6	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40010

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792940

Matrix: WATER

Client: BBLKAL

Date Received: 04/17/09

% Solids:

[illegible]

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40011

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792941

Matrix: WATER

Client: BBLKAL

Date Received: 04/17/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	777	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	12.9	
5310	Organic Carbon, Total	04/22/09	BLKTO042209A	mg/L	1	1.0	6.9	

WET CHEMISTRY

Sample Report Summary

TS40012

Contract: 64539.0.005

Case No.: KZ00

Client: BBLKAL

% Solids:

[illegible]

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40013

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792943

Matrix: WATER

Client: BBLKAL

Date Received: 04/17/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	639	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	16.4	
5310	Organic Carbon, Total	04/22/09	BLKTO042209A	mg/L	1	1.0	4.6	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40014

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792944

Matrix: WATER

Client: BBLKAL

Date Received: 04/17/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	667	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	15.4	
5310	Organic Carbon, Total	04/22/09	BLKTO042209A	mg/L	1	1.0	7.4	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40015

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792945

Matrix: WATER

Client: BBLKAL

Date Received: 04/17/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	691	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	14.5	
5310	Organic Carbon, Total	04/22/09	BLKTO042209A	mg/L	1	1.0	7.5	

WET CHEMISTRY

Sample Report Summary

TS40016

Contract: 64539.0.005

Case No.: KZ00

Client: BBLKAL

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	574	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	6.6	
5310	Organic Carbon, Total	04/22/09	BLKTO042209B	mg/L	1	1.0	2.0	

WET CHEMISTRY

Sample Report Summary

Client Sample No. _____

TS31001

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792963

Matrix: WATER

Client: BBLKAL

Date Received: 04/18/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	371	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.50	7.7	
5310	Organic Carbon, Total	04/22/09	BLKTO042209B	mg/L	1	1.0	7.1	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS31002

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL459

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 792964

Matrix: WATER

Client: BBLKAL

Date Received: 04/18/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	04/20/09	BLKDS042009A	mg/L	1	5.0	370	
2540	Total Suspended Solids	04/20/09	BLKTS042009A	mg/L	0	0.60	8.0	
5310	Organic Carbon, Total	04/22/09	BLKTO042209B	mg/L	1	1.0	7.5	

Analytical Data

Client: TestAmerica Laboratories, Inc.

Job Number: 500-18371-1

General Chemistry**Client Sample ID: TS31000**

Lab Sample ID: 500-18371-1

Date Sampled: 04/13/2009 1425

Client Matrix: Water

Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	32		mg/L	0.53	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1104			
Chloride	39		mg/L	0.16	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1104			
Alkalinity	200		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0750			

Client Sample ID: TS40000

Lab Sample ID: 500-18371-2

Date Sampled: 04/13/2009 1600

Client Matrix: Water

Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chloride	28		mg/L	0.16	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1118			
Sulfate	130		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1222			
Alkalinity	320		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0758			

Client Sample ID: TS40001

Lab Sample ID: 500-18371-3

Date Sampled: 04/13/2009 1610

Client Matrix: Water

Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chloride	42		mg/L	0.16	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1132			
Sulfate	150		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1236			
Alkalinity	210		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0805			

Analytical Data

Client: TestAmerica Laboratories, Inc.

Job Number: 500-18371-1

General Chemistry**Client Sample ID: TS40002**Lab Sample ID: 500-18371-4
Client Matrix: WaterDate Sampled: 04/14/2009 1055
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	64		mg/L	0.53	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1147			
Chloride	100		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1250			
Alkalinity	310		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0814			

Client Sample ID: TS40003Lab Sample ID: 500-18371-5
Client Matrix: WaterDate Sampled: 04/14/2009 0000
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	66		mg/L	0.53	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1201			
Chloride	98		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1305			
Alkalinity	300		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0821			

Client Sample ID: TS40004Lab Sample ID: 500-18371-6
Client Matrix: WaterDate Sampled: 04/14/2009 1200
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	29		mg/L	0.53	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1215			
Chloride	120		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1347			
Alkalinity	280		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0828			

Analytical Data

Client: TestAmerica Laboratories, Inc.

Job Number: 500-18371-1

General Chemistry**Client Sample ID: TS40005**Lab Sample ID: 500-18371-7
Client Matrix: WaterDate Sampled: 04/14/2009 1350
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	160		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1401			
Chloride	89		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1401			
Alkalinity	420		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0837			

Client Sample ID: TS40006Lab Sample ID: 500-18371-8
Client Matrix: WaterDate Sampled: 04/14/2009 1420
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	63		mg/L	0.53	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1244			
Chloride	43		mg/L	0.16	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1244			
Alkalinity	280		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0845			

Client Sample ID: TS40007Lab Sample ID: 500-18371-9
Client Matrix: WaterDate Sampled: 04/15/2009 1030
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	43		mg/L	0.53	2.0	10	300.0
	Anly Batch: 500-62399	Date Analyzed	04/24/2009	1606			
Chloride	130		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1415			
Alkalinity	340		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0906			

Analytical Data

Client: TestAmerica Laboratories, Inc.

Job Number: 500-18371-1

General Chemistry**Client Sample ID: TS40008**Lab Sample ID: 500-18371-10
Client Matrix: WaterDate Sampled: 04/15/2009 1040
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	130		mg/L	1.1	4.0	20	300.0
	Any Batch: 500-62708	Date Analyzed	04/29/2009	1430			
Chloride	80		mg/L	0.32	4.0	20	300.0
	Any Batch: 500-62708	Date Analyzed	04/29/2009	1430			
Alkalinity	310		mg/L	1.1	5.0	1.0	310.1
	Any Batch: 500-62347	Date Analyzed	04/24/2009	0914			

Client Sample ID: TS40009Lab Sample ID: 500-18371-11
Client Matrix: WaterDate Sampled: 04/15/2009 1150
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	42		mg/L	1.1	4.0	20	300.0
	Any Batch: 500-62708	Date Analyzed	04/29/2009	1444			
Chloride	160		mg/L	0.32	4.0	20	300.0
	Any Batch: 500-62708	Date Analyzed	04/29/2009	1444			
Alkalinity	300		mg/L	1.1	5.0	1.0	310.1
	Any Batch: 500-62347	Date Analyzed	04/24/2009	0922			

Client Sample ID: TS40010Lab Sample ID: 500-18371-12
Client Matrix: WaterDate Sampled: 04/15/2009 1325
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	82		mg/L	1.1	4.0	20	300.0
	Any Batch: 500-62708	Date Analyzed	04/29/2009	1458			
Chloride	120		mg/L	0.32	4.0	20	300.0
	Any Batch: 500-62708	Date Analyzed	04/29/2009	1458			
Alkalinity	320		mg/L	1.1	5.0	1.0	310.1
	Any Batch: 500-62347	Date Analyzed	04/24/2009	0930			

Analytical Data

Client: TestAmerica Laboratories, Inc.

Job Number: 500-18371-1

General Chemistry**Client Sample ID: TS40011**Lab Sample ID: 500-18371-13
Client Matrix: WaterDate Sampled: 04/15/2009 1335
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	140		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1513			
Chloride	110		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1513			
Alkalinity	360		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0938			

Client Sample ID: TS40012Lab Sample ID: 500-18371-14
Client Matrix: WaterDate Sampled: 04/16/2009 1050
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	110		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1527			
Chloride	93		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1527			
Alkalinity	350		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0945			

Client Sample ID: TS40013Lab Sample ID: 500-18371-15
Client Matrix: WaterDate Sampled: 04/16/2009 1100
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	67		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1541			
Chloride	110		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1541			
Alkalinity	320		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	0954			

Analytical Data

Client: TestAmerica Laboratories, Inc.

Job Number: 500-18371-1

General Chemistry**Client Sample ID: TS40014**Lab Sample ID: 500-18371-16
Client Matrix: WaterDate Sampled: 04/16/2009 1340
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	180		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1653			
Chloride	44		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1653			
Alkalinity	320		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	1009			

Client Sample ID: TS40015Lab Sample ID: 500-18371-17
Client Matrix: WaterDate Sampled: 04/16/2009 0000
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	180		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1707			
Chloride	43		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1707			
Alkalinity	310		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	1017			

Client Sample ID: TS40016Lab Sample ID: 500-18371-18
Client Matrix: WaterDate Sampled: 04/17/2009 1115
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	35		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1722			
Chloride	140		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1722			
Alkalinity	250		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	1039			

Analytical Data

Client: TestAmerica Laboratories, Inc.

Job Number: 500-18371-1

General Chemistry**Client Sample ID: TS31001**Lab Sample ID: 500-18371-19
Client Matrix: WaterDate Sampled: 04/17/2009 1115
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	34	B	mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62832	Date Analyzed	04/30/2009	1048			
Chloride	43		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62832	Date Analyzed	04/30/2009	1048			
Alkalinity	210		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	1046			

Client Sample ID: TS31002Lab Sample ID: 500-18371-20
Client Matrix: WaterDate Sampled: 04/17/2009 0000
Date Received: 04/21/2009 1010

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Sulfate	34		mg/L	1.1	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1736			
Chloride	43		mg/L	0.32	4.0	20	300.0
	Anly Batch: 500-62708	Date Analyzed	04/29/2009	1736			
Alkalinity	210		mg/L	1.1	5.0	1.0	310.1
	Anly Batch: 500-62347	Date Analyzed	04/24/2009	1053			

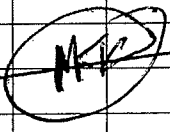
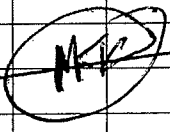
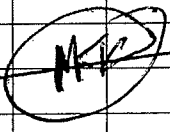
PINK – Retained by BBL

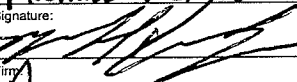
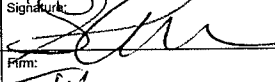
ID#: 13953

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:	Contact & Company Name:	ERIC HRITSUK	Telephone:	312 332 4937 x24	Preservative	E	A	E	E	E	C		Keys Preservation Key: A. H ₂ SO ₄ B. HCL C. HNO ₃ D. NaOH E. None F. Other: G. Other: H. Other: Matrix Key: SO - Soil W - Water T - Tissue SE - Sediment SL - Sludge A - Air NL - NAPL/Oil SW - Sample Wipe Other:																																																																																																																																														
	Address:	30 W. McJAGUE ST	Fax:	312 332 4434	Filtered (✓)																																																																																																																																																						
	City State Zip	CHICAGO IL 60603	E-mail Address:	ERIC.HRITSUK@ARCADIS-USA.COM	# of Containers	2	2	1	1	1	1																																																																																																																																																
	Project Name/Location (City, State):	PLAINWELL GW SAMPLING	Project #:	R0064539.0000.00500	Container Information	2	1	3	9	3	3																																																																																																																																																
Sampler's Printed Name:		MICHAEL KOHAGEN		Sampler's Signature:																																																																																																																																																							
<table border="1"> <thead> <tr> <th rowspan="2">Sample ID</th> <th colspan="2">Collection</th> <th colspan="2">Type (✓)</th> <th rowspan="2">Matrix</th> <th colspan="10">PARAMETER ANALYSIS & METHOD</th> <th rowspan="2">REMARKS</th> </tr> <tr> <th>Date</th> <th>Time</th> <th>Comp</th> <th>Grab</th> <th>TOTAL PCBs</th> <th>TOTAL ORGANIC CARBON</th> <th>TDS</th> <th>TSS</th> <th>CHLORIDE SULFATE ALKALINITY</th> <th>TOTAL METALS</th> </tr> </thead> <tbody> <tr> <td>TS40007</td> <td>4/15/09</td> <td>1030</td> <td></td> <td>✓</td> <td>W</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td rowspan="8"> TOTAL METALS INCLUDE: SODIUM, POTASSIUM, MAGNESIUM & CALCIUM. MS/MSD </td> </tr> <tr> <td>TS40008</td> <td>4/15/09</td> <td>1040</td> <td></td> <td>✓</td> <td>W</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td>TS40009</td> <td>4/15/09</td> <td>1150</td> <td></td> <td>✓</td> <td>W</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td>TS40010</td> <td>4/15/09</td> <td>1325</td> <td></td> <td>✓</td> <td>W</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td>TS40011</td> <td>4/15/09</td> <td>1335</td> <td></td> <td>✓</td> <td>W</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td>TS40012</td> <td>4/16/09</td> <td>1050</td> <td></td> <td>✓</td> <td>W</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td>TS40013</td> <td>4/16/09</td> <td>1100</td> <td></td> <td>✓</td> <td>W</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td>TS40014</td> <td>4/16/09</td> <td>1340</td> <td></td> <td>✓</td> <td>W</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td>TS40015</td> <td>4/16/09</td> <td>—</td> <td></td> <td>✓</td> <td>W</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td colspan="14"> <div style="text-align: center;">  </div> </td> </tr> </tbody> </table>					Sample ID	Collection		Type (✓)		Matrix	PARAMETER ANALYSIS & METHOD										REMARKS	Date	Time	Comp	Grab	TOTAL PCBs	TOTAL ORGANIC CARBON	TDS	TSS	CHLORIDE SULFATE ALKALINITY	TOTAL METALS	TS40007	4/15/09	1030		✓	W	X	X	X	X	X	X		TOTAL METALS INCLUDE: SODIUM, POTASSIUM, MAGNESIUM & CALCIUM. MS/MSD	TS40008	4/15/09	1040		✓	W	X	X	X	X	X		TS40009	4/15/09	1150		✓	W	X	X	X	X	X		TS40010	4/15/09	1325		✓	W	X	X	X	X	X		TS40011	4/15/09	1335		✓	W	X	X	X	X	X		TS40012	4/16/09	1050		✓	W	X	X	X	X	X		TS40013	4/16/09	1100		✓	W	X	X	X	X	X		TS40014	4/16/09	1340		✓	W	X	X	X	X	X		TS40015	4/16/09	—		✓	W	X	X	X	X	X		<div style="text-align: center;">  </div>													
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Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	TAL - BURLINGTON	Printed Name:	MICHAEL KOHAGEN	Printed Name:	
<input checked="" type="checkbox"/> Cooler packed with ice (✓)	<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Signature:		Signature:	
Specify Turnaround Requirements:	STANDARD	Firm:	ARCADIS	Firm/Courier:	
Shipping Tracking #:		Date/Time:	4/16/09 1730	Date/Time:	4/17/09 1010

ID#: 13954

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Contact & Company Name: ERIC HRITSUK Address: 30 W MONROE ST CHICAGO IL 60603 City State Zip CHICAGO IL 60603 Project Name/Location (City, State): PLAINFIELD GW SAMPLING Sampler's Printed Name: MICHAEL KOHAGEN		Telephone: 312 332 4937 x24 Fax: 312 332 4434 E-mail Address: ERIC.HRITSUK@ARCADIS-US.COM Project #: B0064539.000.00500 Sampler's Signature: 		Preservative E A E E E C Filtered (✓) 2 2 1 1 1 1 # of Containers 2 2 1 1 1 1 Container Information 2 1 3 9 3 3							Keys Preservation Key: A. H ₂ SO ₄ B. HCL C. HNO ₃ D. NaOH E. None F. Other: _____ G. Other: _____ H. Other: _____ Matrix Key: SO - Soil W - Water T - Tissue SE - Sediment SL - Sludge A - Air Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: 1 L Poly 10. Other: _____ NL - NAPL/Oil SW - Sample Wipe Other: _____												
Sample ID		Collection Date Time 4/17/09 1115 ↓ 1115 ↓ -		Type (✓) Comp Grab ✓ ✓ ✓		Matrix W ↓ ↓		PARAMETER ANALYSIS & METHOD TOTAL PCB TOTAL ORGANIC CARBON TDS TSS CHLORIDE SULFATE ALKALINITY TOTAL METALS						REMARKS MS/MSD									
TS40016		4/17/09 1115		✓		W		X		X		X		X		X		X		X		X	
TS31001		↓ 1115		✓		↓		X		X		X		X		X		X		X		X	
TS31002		↓ -		✓		↓		X		X		X		X		X		X		X		X	
Special Instructions/Comments:																							
Special QA/QC Instructions(✓):																							
Laboratory Information and Receipt Lab Name: TAL - BURLINGTON <input checked="" type="checkbox"/> Cooler packed with ice (✓) Specify Turnaround Requirements: STANDARD Shipping Tracking #:		Cooler Custody Seal (✓) <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact Sample Receipt: Condition/Cooler Temp:		Relinquished By Printed Name: MICHAEL KOHAGEN Signature: Firm: ARCADIS Date/Time: 4/17/09 1500		Received By Printed Name: Vu Pham Signature: Firm/Courier: TA - Burlington Date/Time: 4/18/09 0930		Relinquished By Printed Name: Signature: Firm/Courier: Date/Time:		Laboratory Received By Printed Name: Signature: Firm: Date/Time:													

Kalamazoo River Superfund Site Former Plainwell Impoundment Groundwater Sampling

Data Review

PLAINWELL, MICHIGAN

PCB, Metals and Miscellaneous Analyses

SDG# KAL462

Analyses Performed By:
TestAmerica Laboratories
Burlington, Vermont

Report: # 10605R
Review Level: Tier III
Project: B0064539.0000.00500

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #KAL462 for samples collected in association with the Plainwell site. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	PCB	MET	MISC
TS31003	799720	Ground Water	6/29/2009				X	X	X
TS40017	799721	Ground Water	6/29/2009				X	X	X
TS40018	799722	Ground Water	6/29/2009				X	X	X
TS40019	799723	Ground Water	6/29/2009				X	X	X
TS40020	799724	Ground Water	6/30/2009				X	X	X
TS40021	799725	Ground Water	6/30/2009	TS40020			X	X	X
TS40022	799726	Ground Water	6/30/2009				X	X	X
TS40023	799727	Ground Water	6/30/2009				X	X	X
TS40024	799728	Ground Water	6/30/2009				X	X	X
TS40025	799729	Ground Water	6/30/2009				X	X	X
TS40026	799840	Ground Water	7/1/2009				X	X	X
TS40027	799841	Ground Water	7/1/2009				X	X	X
TS40028	799842	Ground Water	7/1/2009				X	X	X
TS40029	799843	Ground Water	7/1/2009				X	X	X
TS40030	799844	Ground Water	7/1/2009				X	X	X
TS40031	799845	Ground Water	7/1/2009	TS40030			X	X	X
TS40032	799846	Ground Water	7/1/2009				X	X	X
TS40033	799924	Ground Water	7/2/2009				X	X	X
TS31004	799925	Ground Water	7/2/2009				X	X	X
TS31005	799926	Ground Water	7/2/2009	TS31004			X	X	X

Note:

1. Miscellaneous parameters include total organic carbon (TOC), total suspended solids (TSS), total dissolved solids (TDS), chloride, sulfate, and alkalinity.
2. Matrix spike/matrix spike duplicate/laboratory duplicate was performed on sample locations TS40024 and TS31004.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to (United States Environmental Protection Agency) USEPA Method 8082. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999 and USEPA Region II (SOP HW-45, Revision 1).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
 - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
 - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
 - UB Compound considered non-detect at the listed value due to associated blank contamination.
 - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
 - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in this package has been derived using a procedure developed by TestAmerica as an attempt to improve the analytical process of calibration, identification and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear. While significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to straighten the curve and allow the use of response factors for calibration purposes.

During the initial calibration, a response factor is calculated for each peak in the individual Aroclors. A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of false positive and false negative peak identifications.

The determination of which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Silvon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which is less likely to be affected by interferences. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. System Performance

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

A maximum RSD of 20% is allowed or a correlation coefficient greater than 0.99. Multiple-point calibrations were performed for all Aroclors.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (15%).

All calibration criteria were within the control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires the surrogate compounds must exhibited recoveries within the method established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
TS40027 TS40031	Tetrachloro-m-xylene	< LL but > 10%
	Decachlorobiphenyl	AC

Lower control limit (LL)

Acceptable (AC)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
One surrogate exhibiting recovery outside the control limits but > 10%	Non-detect	No Action
	Detect	
Surrogates diluted below the calibration curve due to the high concentration of a target compound.	Non-detect	J ¹
	Detect	

¹ A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the method established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the method established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

7. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the method established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

8. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS40020/TS40021	All Aroclors	0.048 U	0.048 U	AC
TS40030/TS40031	All Aroclors	0.049 U	0.051 U	AC
TS31004/TS31005	Aroclor 1242	0.048 U	0.048 U	AC

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

9. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

All identified compounds met the specified criteria.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs; SW846 8082	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
GAS CHROMATOGRAPHY (GC/FID)						
Tier II Validation						
Holding times		X		X		
Reporting limits (units)		X		X		
Blanks						
A. Method blanks		X		X		
B. Field blanks		X		X		
Laboratory Control Sample (LCS) %R		X		X		
Laboratory Control Sample Duplicate(LCSD) %R					X	
LCS/LCSD Precision (RPD)					X	
Matrix Spike (MS) %R		X		X		
Matrix Spike Duplicate(MSD) %R		X		X		
MS/MSD Precision (RPD)		X		X		
Field Duplicate (RPD)		X		X		
Surrogate Spike Recoveries		X	X			
Dilution Factor		X		X		
Moisture Content		X		X		
Tier III Validation						
Initial calibration %RSDs		X		X		
Continuing calibration %Ds		X		X		
System performance and column resolution		X		X		
Compound identification and quantitation						
A. Quantitation Reports		X		X		
B. RT of sample compounds within the established RT windows		X		X		
C. Pattern identification		X		X		
D. Transcription/calculation errors present				X		
E. Reporting limits adjusted to reflect sample dilutions		X		X		

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010B, 9060, 300.0, 310.1 and SM2540. Data were reviewed in accordance with USEPA National Functional Guidelines of October 2004.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

- U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

- B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

- Quantitation (Q) Qualifiers

- E The reported value is estimated due to the presence of interference.

- N Spiked sample recovery is not within control limits.

- * Duplicate analysis is not within control limits.

- Validation Qualifiers

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

- UB Analyte considered non-detect at the listed value due to associated blank contamination.

- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010B	Water	180 days from collection to analysis	Cooled @ 4 °C; preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cooled @ 4 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the instrument detection limit (IDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

All analytes associated with the QA blanks exhibited a concentration less than the IDL, with the exception of the analytes listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (J) of data. Sample results less than the BAL associated with the following sample locations were qualified as listed in the following table.

Sample Locations	Analytes	Sample Result	Qualification
TS40018	Potassium	Detected sample results <RL and <BAL	"UB" at the RL

RL = reporting limit

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard

recoveries were within control limits.

All continuing calibration verification standard recoveries were within the control limit.

3.2 CRDL Check Standard

The CRDL check standard serves to verify the linearity of calibration of the analysis at the CRDL. The CRDL standard is not required for the analysis of aluminum (Al), barium (Ba), calcium (Ca), iron (Fe), magnesium (Mg), sodium (Na), and potassium (K). The criteria used to evaluate the CRDL standard analysis are presented below in the CRDL standards evaluation table.

All CRDL standard recoveries were within control limits.

3.3 ICP Interference Control Sample (ICS)

The ICS verifies the laboratories interelement and background correction factors.

All ICS exhibited recoveries within the control limits.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory qualifier "N" will be removed.

The MS analysis performed on sample locations TS40024 and TS31004 exhibited recoveries within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The laboratory duplicate sample results exhibited RPD within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS40020/TS40021	Calcium	93800	96000	2.3%
	Magnesium	21400	22100	3.2%
	Sodium	52700	54300	2.9%
	Potsassium	1650 B	1830 B	AC
TS40030/TS40031	Calcium	123000	124000	0.8%
	Magnesium	25400	25700	1.1%
	Sodium	56300	56600	2.9%
	Potsassium	1930 B	2170 B	AC
TS31004/TS31005	Calcium	84800	83900	1.0%
	Magnesium	23000	22800	0.8%
	Sodium	27500	27200	1.0 %
	Potsassium	2680 B	2620 B	AC

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

The serial dilution performed on sample locations TS40024 and TS31004 exhibited %D within the control limit.

8. Furnace Analysis QC

No furnace analyses were performed on the samples.

9. Method of Standard Additions (MSA)

No samples were analyzed following the method of standard additions.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW-846 6000/7000	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP)						
Atomic Absorption – Manual Cold Vapor (CV)						
Tier II Validation						
Holding Times		X		X		
Reporting limits (units)		X		X		
Blanks						
A. Instrument Blanks		X		X		
B. Method Blanks		X		X		
C. Equipment/Field Blanks		X		X		
Laboratory Control Sample (LCS)		X		X		
Matrix Spike (MS) %R		X		X		
Matrix Spike Duplicate (MSD) %R		X		X		
MS/MSD Precision (RPD)		X		X		
Field/Lab Duplicate (RPD)		X		X		
ICP Serial Dilution		X		X		
Reporting Limit Verification		X		X		
Raw Data		X		X		
Tier III Validation						
Initial Calibration Verification		X		X		
Continuing Calibration Verification		X		X		
CRDL Standard		X		X		
ICP Interference Check		X		X		
Transcription/calculation errors present		X		X		
Reporting limits adjusted to reflect sample dilutions		X		X		

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Total Organic Carbon by EPA 9060	Water	28 days from collection to analysis	Cooled @ 4 °C; preserved to a pH of less than 2.
Total Dissolved Solids By EPA 160.1	Water	7 days from collection to analysis	Cooled @ 4 °C.
Total Suspended Solids By EPA 160.2	Water	7 days from collection to analysis	Cooled @ 4 °C.
Chloride by EPA 300.0	Water	28 days from collection to analysis	Cooled @ 4 °C.
Sulfate by EPA 300.0	Water	28 days from collection to analysis	Cooled @ 4 °C.
Alkalinity by EPA 310.1	Water	14 days from collection to analysis	Cooled @ 4 °C.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL. No qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory qualifier "N" will be removed.

The MS analysis performed on sample locations TS40024 and TS31004 exhibited recoveries within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The laboratory duplicate sample results exhibited a RPD within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS40020/TS40021	TOC	2.0	2.2	9.5%
	TDS	503	516	2.5%
	TSS	11.7	11.8	0.8%
	Chloride	91	92	1.0%
	Sulfate	38	39	2.5%
	Alkalinity	260	260	0%
TS40030/TS40031	TOC	5.1	5	1.9%
	TDS	615	613	0.3%
	TSS	19.3	19.5	1.0%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Chloride	110	100	9.5%
	Sulfate	94	96	2.1%
	Alkalinity	300	300	0%
TS31004/TS31005	TOC	6.2	6.3	1.5%
	TDS	407	395	2.9%
	TSS	14.1	13.9	1.4%
	Chloride	51	51	0%
	Sulfate	29	28	3.5%
	Alkalinity	240	250	4.0%

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: Various Methods	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Field blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Lab/Field Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Raw Data		X		X	
Transcription/calculation errors present				X	
Reporting limits adjusted to reflect sample dilutions		X		X	

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

VALIDATION PERFORMED

BY: Jeffrey L. Davin

SIGNATURE:



DATE: August 10, 2009

PEER REVIEW: Dennis Capria

DATE: August 25, 2009

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS31003

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799720

Phase Weight: 1060. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40017

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799721

Phase Weight: 1005. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40018

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799722

Phase Weight: 1000. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40019

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799723

Phase Weight: 1020. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

FORM 1
AROCOLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40020

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799724

Phase Weight: 1040. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCLOL ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40021

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799725

Phase Weight: 1040. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40022

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799726

Phase Weight: 1060. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCLOL ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40023

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799727

Phase Weight: 1030. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40024

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799728

Phase Weight: 1040. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40025

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799729

Phase Weight: 1020. (mL)

Date Received: 07/01/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40026

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799840

Phase Weight: 1000. (mL)

Date Received: 07/02/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40027

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799841

Phase Weight: 960. (mL)

Date Received: 07/02/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.052	U
11104-28-2	Aroclor-1221	0.052	U
11141-16-5	Aroclor-1232	0.052	U
53469-21-9	Aroclor-1242	0.052	U
12672-29-6	Aroclor-1248	0.052	U
11097-69-1	Aroclor-1254	0.052	U
11096-82-5	Aroclor-1260	0.052	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40028

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799842

Phase Weight: 1050. (mL)

Date Received: 07/02/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40029

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799843

Phase Weight: 960. (mL)

Date Received: 07/02/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.052	U
11104-28-2	Aroclor-1221	0.052	U
11141-16-5	Aroclor-1232	0.052	U
53469-21-9	Aroclor-1242	0.052	U
12672-29-6	Aroclor-1248	0.052	U
11097-69-1	Aroclor-1254	0.052	U
11096-82-5	Aroclor-1260	0.052	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40030

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799844

Phase Weight: 1020. (mL)

Date Received: 07/02/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

FORM 1
AROCLOL ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40031

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799845

Phase Weight: 980. (mL)

Date Received: 07/02/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.051	U
11104-28-2	Aroclor-1221	0.051	U
11141-16-5	Aroclor-1232	0.051	U
53469-21-9	Aroclor-1242	0.051	U
12672-29-6	Aroclor-1248	0.051	U
11097-69-1	Aroclor-1254	0.051	U
11096-82-5	Aroclor-1260	0.051	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40032

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799846

Phase Weight: 1040. (mL)

Date Received: 07/02/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40033

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799924

Phase Weight: 1020. (mL)

Date Received: 07/03/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

FORM 1
AROCLOL ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS31004

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799925

Phase Weight: 1040. (mL)

Date Received: 07/03/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS31005

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL462

Phase Type: WATER

Lab Sample ID: 799926

Phase Weight: 1040. (mL)

Date Received: 07/03/09

Injection Volume: 1.0 (uL)

Date Extracted: 07/06/09

Dilution Factor: 1.0

Date Analyzed: 07/09/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS31003

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799720
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	79700			P
7439-95-4	Magnesium	21000			P
7440-23-5	Sodium	23300			P
7440-09-7	Potassium	2720	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments:

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS31004

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799925
Level (low/med): LOW Date Received: 07/03/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	84800			P
7439-95-4	Magnesium	23000			P
7440-23-5	Sodium	27500			P
7440-09-7	Potassium	2680	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS31005

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799926
Level (low/med): LOW Date Received: 07/03/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	83900			P
7439-95-4	Magnesium	22800			P
7440-23-5	Sodium	27200			P
7440-09-7	Potassium	2620	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40017

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799721
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	190000			P
7439-95-4	Magnesium	33700			P
7440-23-5	Sodium	14300			P
7440-09-7	Potassium	7490		N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40018

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799722
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	95300			P
7439-95-4	Magnesium	19000			P
7440-23-5	Sodium	27700			P
7440-09-7	Potassium	5000 1160	B	N UB	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40019

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799723
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	116000			P
7439-95-4	Magnesium	27800			P
7440-23-5	Sodium	56000			P
7440-09-7	Potassium	2360	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40020

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799724
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	93800			P
7439-95-4	Magnesium	21400			P
7440-23-5	Sodium	52700			P
7440-09-7	Potassium	1650	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40021

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799725
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	96000			P
7439-95-4	Magnesium	22100			P
7440-23-5	Sodium	54300			P
7440-09-7	Potassium	1830	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40022

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799726
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	99600			P
7439-95-4	Magnesium	25700			P
7440-23-5	Sodium	46300			P
7440-09-7	Potassium	2220	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40023

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZ00 SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799727
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	193000			P
7439-95-4	Magnesium	27000			P
7440-23-5	Sodium	48500			P
7440-09-7	Potassium	1620	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40024

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799728
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	168000			P
7439-95-4	Magnesium	35400			P
7440-23-5	Sodium	51000			P
7440-09-7	Potassium	3140	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40025

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799729
Level (low/med): LOW Date Received: 07/01/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	127000			P
7439-95-4	Magnesium	29600			P
7440-23-5	Sodium	74000			P
7440-09-7	Potassium	2560	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40026

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799840
Level (low/med): LOW Date Received: 07/02/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	115000			P
7439-95-4	Magnesium	28900			P
7440-23-5	Sodium	88800			P
7440-09-7	Potassium	2290	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40027

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799841
Level (low/med): LOW Date Received: 07/02/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	122000			P
7439-95-4	Magnesium	29900			P
7440-23-5	Sodium	63500			P
7440-09-7	Potassium	2090	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40028

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799842
Level (low/med): LOW Date Received: 07/02/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	141000			P
7439-95-4	Magnesium	26500			P
7440-23-5	Sodium	59900			P
7440-09-7	Potassium	2170	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____

Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40029

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799843
Level (low/med): LOW Date Received: 07/02/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	160000			P
7439-95-4	Magnesium	29200			P
7440-23-5	Sodium	58400			P
7440-09-7	Potassium	2090	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40030

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799844
Level (low/med): LOW Date Received: 07/02/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	123000			P
7439-95-4	Magnesium	25400			P
7440-23-5	Sodium	56300			P
7440-09-7	Potassium	1930	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40031

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799845
Level (low/med): LOW Date Received: 07/02/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	124000			P
7439-95-4	Magnesium	25700			P
7440-23-5	Sodium	56600			P
7440-09-7	Potassium	2170	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____
Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40032

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799846
Level (low/med): LOW Date Received: 07/02/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	129000			P
7439-95-4	Magnesium	34100			P
7440-23-5	Sodium	38600			P
7440-09-7	Potassium	4120	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40033

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL462
Matrix (soil/water): WATER Lab Sample ID: 799924
Level (low/med): LOW Date Received: 07/03/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	90000			P
7439-95-4	Magnesium	23100			P
7440-23-5	Sodium	62700			P
7440-09-7	Potassium	2400	B	N	P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

WET CHEMISTRY

Sample Report Summary

TS31003

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	386	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	15.7	
5310	Organic Carbon, Total	07/02/09	BLKTO070209B	mg/L	1	1.0	7.1	

WET CHEMISTRY

Sample Report Summary

TS40017

Contract: 64539.0.005

Case No.: KZ00

Client: BBLKAL

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	749	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	0.50	U
5310	Organic Carbon, Total	07/08/09	BLKTO070809A	mg/L	2	2.0	19.5	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40018

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799722

Matrix: WATER

Client: BBLKAL

Date Received: 07/01/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	438	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	13.7	
5310	Organic Carbon, Total	07/02/09	BLKTO070209B	mg/L	1	1.0	3.2	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40019

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799723

Matrix: WATER

Client: BBLKAL

Date Received: 07/01/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	615	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	15.4	
5310	Organic Carbon, Total	07/02/09	BLKTO070209B	mg/L	1	1.0	3.4	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40020

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZOO

Lab Sample ID: 799724

Matrix: WATER

Client: BBLKAL

Date Received: 07/01/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	503	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	11.7	
5310	Organic Carbon, Total	07/02/09	BLKTO070209B	mg/L	1	1.0	2.0	

WET CHEMISTRY

Sample Report Summary

TS40021

SDG No.: KAL462

Lab Sample ID: 799725

Date Received: 07/01/09

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	516	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	11.8	
5310	Organic Carbon, Total	07/02/09	BLKTO070209B	mg/L	1	1.0	2.2	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40022

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799726

Matrix: WATER

Client: BBLKAL

Date Received: 07/01/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	506	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	9.5	
5310	Organic Carbon, Total	07/02/09	BLKTO070209B	mg/L	1	1.0	1.2	

WET CHEMISTRY

Sample Report Summary

TS40023

SDG No.: KAL462

Lab Sample ID: 799727

Date Received: 07/01/09

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	921	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	29.4	
5310	Organic Carbon, Total	07/02/09	BLKTO070209B	mg/L	1	1.0	12.3	

WET CHEMISTRY

Sample Report Summary

TS40024

SDG No.: KAL462

Lab Sample ID: 799728

Date Received: 07/01/09

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	833	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	13.1	
5310	Organic Carbon, Total	07/02/09	BLKTO070209B	mg/L	1	1.0	5.7	

WET CHEMISTRY

Sample Report Summary

TS40025

SDG No.: KAL462

Lab Sample ID: 799729

Date Received: 07/01/09

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/02/09	BLKDS070209A	mg/L	1	5.0	708	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	16.7	
5310	Organic Carbon, Total	07/02/09	BLKTO070209B	mg/L	1	1.0	2.9	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40026

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799840

Matrix: WATER

Client: BBLKAL

Date Received: 07/02/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/07/09	BLKDS070709A	mg/L	1	5.0	704	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	9.5	
5310	Organic Carbon, Total	07/07/09	BLKTO070709A	mg/L	1	1.0	1.9	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40027

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799841

Matrix: WATER

Client: BBLKAL

Date Received: 07/02/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/07/09	BLKDS070709A	mg/L	1	5.0	712	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	13.1	
5310	Organic Carbon, Total	07/07/09	BLKTO070709A	mg/L	1	1.0	3.4	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40028

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799842

Matrix: WATER

Client: BBLKAL

Date Received: 07/02/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/07/09	BLKDS070709A	mg/L	1	5.0	671	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	11.8	
5310	Organic Carbon, Total	07/07/09	BLKTO070709A	mg/L	1	1.0	4.6	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40029

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799843

Matrix: WATER

Client: BBLKAL

Date Received: 07/02/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/07/09	BLKDS070709A	mg/L	1	5.0	765	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	23.0	
5310	Organic Carbon, Total	07/07/09	BLKTO070709A	mg/L	1	1.0	5.9	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40030

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZOO

Lab Sample ID: 799844

Matrix: WATER

Client: BBLKAL

Date Received: 07/02/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/07/09	BLKDS070709A	mg/L	1	5.0	615	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	19.3	
5310	Organic Carbon, Total	07/07/09	BLKTO070709A	mg/L	1	1.0	5.1	

WET CHEMISTRY

Sample Report Summary

TS40031

SDG No.: KAL462

Lab Sample ID: 799845

Date Received: 07/02/09

[illegible]

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40032

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799846

Matrix: WATER

Client: BBLKAL

Date Received: 07/02/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/07/09	BLKDS070709A	mg/L	1	5.0	653	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	14.1	
5310	Organic Carbon, Total	07/07/09	BLKTO070709A	mg/L	1	1.0	7.1	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40033

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799924

Matrix: WATER

Client: BBLKAL

Date Received: 07/03/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/07/09	BLKDS070709A	mg/L	1	5.0	515	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	6.1	
5310	Organic Carbon, Total	07/07/09	BLKTO070709A	mg/L	1	1.0	1.5	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS31004

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799925

Matrix: WATER

Client: BBLKAL

Date Received: 07/03/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/07/09	BLKDS070709A	mg/L	1	5.0	407	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	14.1	
5310	Organic Carbon, Total	07/07/09	BLKTO070709A	mg/L	1	1.0	6.2	

WET CHEMISTRY

Sample Report Summary

Client Sample No. _____

TS31005

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL462

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 799926

Matrix: WATER

Client: BBLKAL

Date Received: 07/03/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	07/07/09	BLKDS070709A	mg/L	1	5.0	395	
2540	Total Suspended Solids	07/06/09	BLKTS070609A	mg/L	0	0.50	13.9	
5310	Organic Carbon, Total	07/07/09	BLKTO070709A	mg/L	1	1.0	6.3	

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS31003
Lab Sample ID: 500-19848-1

Date Sampled: 06/29/2009 1310
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution	
Method: 300.0						
Chloride	44	B	mg/L	0.46	2.0	10
Sulfate	27	B	mg/L	0.63	2.0	10
Method: 310.1						
Alkalinity	220		mg/L	1.1	5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40017
Lab Sample ID: 500-19848-2

Date Sampled: 06/29/2009 1400
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Chloride	21	B mg/L	Date Analyzed: 07/08/2009 0.46	1405 2.0	10
Method: 300.0 Sulfate	100	B mg/L	Date Analyzed: 07/09/2009 1.3	1525 4.0	20
Method: 310.1 Alkalinity	460	mg/L	Date Analyzed: 07/10/2009 1.1	1101 5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40018
Lab Sample ID: 500-19848-3

Date Sampled: 06/29/2009 1455
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution	
Method: 300.0						
Chloride	37	B	mg/L	0.46	2.0	10
Sulfate	87	B	mg/L	0.63	2.0	10
Method: 310.1						
Alkalinity	230		mg/L	1.1	5.0	1.0

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30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40019
Lab Sample ID: 500-19848-4

Date Sampled: 06/29/2009 1535
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Sulfate	83	B mg/L	Date Analyzed: 07/08/2009 0.63	1502 2.0	10
Method: 300.0 Chloride	110	mg/L	Date Analyzed: 07/09/2009 0.92	1539 4.0	20
Method: 310.1 Alkalinity	290	mg/L	Date Analyzed: 07/10/2009 1.1	1116 5.0	1.0

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30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40020
Lab Sample ID: 500-19848-5

Date Sampled: 06/30/2009 1000
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution	
Method: 300.0 Sulfate	38	B	mg/L	0.63	2.0	10
Method: 300.0 Chloride	91		mg/L	0.92	4.0	20
Method: 310.1 Alkalinity	260		mg/L	1.1	5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40021
Lab Sample ID: 500-19848-6

Date Sampled: 06/30/2009 0000
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Sulfate	39	B mg/L	Date Analyzed: 07/08/2009 0.63	1531 2.0	10
Method: 300.0 Chloride	92	mg/L	Date Analyzed: 07/09/2009 0.92	1636 4.0	20
Method: 310.1 Alkalinity	260	mg/L	Date Analyzed: 07/10/2009 1.1	1131 5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40022
Lab Sample ID: 500-19848-7

Date Sampled: 06/30/2009 1040
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Sulfate	35 B	mg/L	Date Analyzed: 07/08/2009 0.63	1545 2.0	10
Method: 300.0 Chloride	96	mg/L	Date Analyzed: 07/09/2009 0.92	1651 4.0	20
Method: 310.1 Alkalinity	280	mg/L	Date Analyzed: 07/10/2009 1.1	1153 5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40023
Lab Sample ID: 500-19848-8

Date Sampled: 06/30/2009 1155
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Chloride	89	mg/L	Date Analyzed: 07/09/2009 0.92	1705 4.0	20
Method: 300.0 Sulfate	170	mg/L	Date Analyzed: 07/10/2009 1.3	1213 4.0	20
Method: 310.1 Alkalinity	370	mg/L	Date Analyzed: 07/10/2009 1.1	1201 5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID:TS40024
Lab Sample ID: 500-19848-9

Date Sampled: 06/30/2009 1410
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Chloride	80	mg/L	0.92	4.0	20
Method: 300.0 Sulfate	170	mg/L	6.3	20	100
Method: 310.1 Alkalinity	350	mg/L	1.1	5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40025
Lab Sample ID: 500-19848-10

Date Sampled: 06/30/2009 1400
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Sulfate	57 B	mg/L	Date Analyzed: 07/08/2009 0.63	1614 2.0	10
Method: 300.0 Chloride	140	mg/L	Date Analyzed: 07/09/2009 0.92	1802 4.0	20
Method: 310.1 Alkalinity	360	mg/L	Date Analyzed: 07/10/2009 1.1	1224 5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40026
Lab Sample ID: 500-19848-11

Date Sampled: 07/01/2009 1025
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Sulfate	73	B	Date Analyzed: 07/08/2009 mg/L 0.63	1628 2.0	10
Method: 300.0 Chloride	170		Date Analyzed: 07/10/2009 mg/L 4.6	1311 20	100
Method: 310.1 Alkalinity	290		Date Analyzed: 07/10/2009 mg/L 1.1	1232 5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40027
Lab Sample ID: 500-19848-12

Date Sampled: 07/01/2009 1045
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Sulfate	89 B	mg/L	Date Analyzed: 07/08/2009 0.63	1643 2.0	10
Method: 300.0 Chloride	120	mg/L	Date Analyzed: 07/09/2009 0.92	1831 4.0	20
Method: 310.1 Alkalinity	320	mg/L	Date Analyzed: 07/10/2009 1.1	1239 5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40028
Lab Sample ID: 500-19848-13

Date Sampled: 07/01/2009 1230
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Sulfate	99	mg/L	0.63	2.0	10
Method: 300.0 Chloride	110	mg/L	0.92	4.0	20
Method: 310.1 Alkalinity	340	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40029
Lab Sample ID: 500-19848-14

Date Sampled: 07/01/2009 1230
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Chloride	110	mg/L	0.92	4.0	20
Method: 300.0 Sulfate	140	mg/L	1.3	4.0	20
Method: 310.1 Alkalinity	350	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40030
Lab Sample ID: 500-19848-15

Date Sampled: 07/01/2009 1355
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Chloride	110	mg/L	Date Analyzed: 07/09/2009 0.92	1942 4.0	20
Method: 300.0 Sulfate	94	mg/L	Date Analyzed: 07/10/2009 1.3	1408 4.0	20
Method: 310.1 Alkalinity	300	mg/L	Date Analyzed: 07/10/2009 1.1	1303 5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS40031
Lab Sample ID: 500-19848-16

Date Sampled: 07/01/2009 0000
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Chloride	100	mg/L	0.92	4.0	20
Method: 300.0 Sulfate	96	mg/L	1.3	4.0	20
Method: 310.1 Alkalinity	300	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID:TS40032
Lab Sample ID: 500-19848-17

Date Sampled: 07/01/2009 1510
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Chloride	59	mg/L	Date Analyzed: 07/09/2009 0.92	2011 4.0	20
Method: 300.0 Sulfate	150	mg/L	Date Analyzed: 07/10/2009 1.3	1436 4.0	20
Method: 310.1 Alkalinity	320	mg/L	Date Analyzed: 07/10/2009 1.1	1332 5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID:TS40033
Lab Sample ID: 500-19848-18

Date Sampled:07/02/2009 0955
Date Received:07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Chloride	120	Date Analyzed: 07/09/2009 mg/L	0.92	2025 4.0	20
Method: 300.0 Sulfate	26	Date Analyzed: 07/10/2009 mg/L	1.3	1451 4.0	20
Method: 310.1 Alkalinity	250	Date Analyzed: 07/10/2009 mg/L	1.1	1339 5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-19848-1
Sdg Number: KAL462

Client Sample ID: TS31004
Lab Sample ID: 500-19848-19

Date Sampled: 07/02/2009 1030
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	07/10/2009	1505	
Chloride	51	mg/L	0.92	4.0	20
Sulfate	29	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	07/10/2009	1401	
Alkalinity	240	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

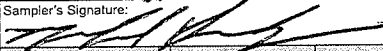
Job Number: 500-19848-1
Sdg Number: KAL462


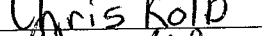
Client Sample ID: TS31005
Lab Sample ID: 500-19848-20

Date Sampled: 07/02/2009 0000
Date Received: 07/07/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Chloride	51	mg/L	Date Analyzed: 07/09/2009 0.92	2040 4.0	20
Method: 300.0 Sulfate	28	mg/L	Date Analyzed: 07/10/2009 1.3	1548 4.0	20
Method: 310.1 Alkalinity	250	mg/L	Date Analyzed: 07/10/2009 1.1	1417 5.0	1.0

PINK – Retained by BBL

Send Results to:	Contact & Company Name:		Telephone:		Preservative		E		A		E		E		E		C			
	ERIC HRITSUK		312 332 4937 x 24		Filtered (✓)															
	Address:		Fax:		# of Containers		2		2		1		1		1		1			
	30 W MONROE ST		312 332 4434		Container Information		2		1		3		9		3		3			
	City		State		Zip		E-mail Address:		PARAMETER ANALYSIS & METHOD											
	CHICAGO		IL		60603		ERIC.HRITSUK@ARCADIS-USA.COM													
	Project Name/Location (City, State):						Project #:													
	PLAINWELL GW SAMPLING						B0064539.0000.00500													
	Sampler's Printed Name:						Sampler's Signature:													
	MICHAEL KOHNEN																			
	Sample ID		Collection		Type (✓)		Matrix		TOTAL PCBs		TOTAL ORGANIC CARBON		TDS		TSS		CHLORIDE, SULFATE, ALKALINITY		TOTAL METALS	
		Date		Time	Comp	Grab														
	TS40026	7/1/09		1025		✓	W	X	X	X	X	X	X	X	X	X	X	X	X	X
	TS40027			1045		✓	W	X	X	X	X	X	X	X	X	X	X	X	X	X
	TS40028			1230		✓	W	X	X	X	X	X	X	X	X	X	X	X	X	X
	TS40029			1230		✓	W	X	X	X	X	X	X	X	X	X	X	X	X	X
	TS40030			1355		✓	W	X	X	X	X	X	X	X	X	X	X	X	X	X
	TS40031			—		✓	W	X	X	X	X	X	X	X	X	X	X	X	X	X
	TS40032			1510		✓	W	X	X	X	X	X	X	X	X	X	X	X	X	X
	(MK)																			
	REMARKS																			

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name: FAL-BURLINGTON	Cooler Custody Seal (✓) <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Printed Name: MICHAEL KORNSEN Signature: 	Printed Name: Signature: 	Printed Name: Signature: 	Printed Name: Chris Kolb Signature: 
<input checked="" type="checkbox"/> Cooler packed with ice (✓) Specify Turnaround Requirements: STANDARD	Sample Receipt:	Firm: ARCADIS Date/Time: 7/1/09 1800	Firm/Courier: Date/Time: 	Firm/Courier: Date/Time: 	Firm: IT Date/Time: 7/2/09 1020
Shipping Tracking #: FED Ex	Condition/Cooler Temp:	Date/Time:			

ID#: **13980**

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:	Contact & Company Name:	Telephone:	Preservative	E	A	E	E	E	C			
	Address:	Fax:	Filtered (✓)									
	City	E-mail Address:	# of Containers	2	2	1	1	1	1			
	State		Container Information	2	1	3	9	3	3			
	Zip		PARAMETER ANALYSIS & METHOD									
Project Name/Location (City, State):	Project #:		TOTAL PCBs	TOTAL ORGANIC CARBON	TDS	TSS	CHLORIDE, SULFATE, ALKALINITY	TOTAL METALS				
Sampler's Printed Name:	Sampler's Signature:											
Sample ID	Collection	Type (✓)	Matrix									
	Date	Time	Comp	Grab								
TS31003	6/29/09	1310	✓	W	X	X	X	X	X	X		
TS3 TS40017	6/29/09	1400	✓	W	X	X	X	X	X	X		
TS40018	6/29/09	1455	✓	W	X	X	X	X	X	X		
TS40019	6/29/09	1535	✓	W	X	X	X	X	X	X		
TS40020	6/30/09	1000	✓	W	X	X	X	X	X	X		
TS40021	6/30/09	—	✓	W	X	X	X	X	X	X		
TS40022	6/30/09	1040	✓	W	X	X	X	X	X	X		
TS40023	6/30/09	1155	✓	W	X	X	X	X	X	X		
TS40024	6/30/09	1410	✓	W	X	X	X	X	X	X		
TS40025	6/30/09	1400	✓	W	X	X	X	X	X	X		
(M)												

Keys

Preservation Key:
A. H₂SO₄
B. HCL
C. HNO₃
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil
W - Water
T - Tissue
SE - Sediment
SL - Sludge
A - Air
NL - NAPL/Oil
SW - Sample Wipe
Other: _____

REMARKS

MS/MSD.

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By		Received By		Relinquished By		Laboratory Received By	
Lab Name:	Cooler Custody Seal (✓)	Printed Name:	Signature:	Printed Name:	Signature:	Printed Name:	Signature:	Printed Name:	Signature:
FAL - BURLINGTON	<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	MICHAEL KOHAGEN	<i>[Signature]</i>					Chris Kolb	<i>[Signature]</i>
<input checked="" type="checkbox"/> Cooler packed with ice (✓)		ARCADIS	<i>[Signature]</i>					1A	<i>[Signature]</i>
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Date/Time:	Firm/Courier:	Date/Time:	Firm/Courier:	Date/Time:	Firm:	Date/Time:
STANDARD			6/30/09 1800						7/1/09 1040
Shipping Tracking #:	Condition/Cooler Temp: _____								
FED EX									

Kalamazoo River Superfund Site Former Plainwell Impoundment Groundwater Sampling

Data Review

PLAINWELL, MICHIGAN

PCB, Metals and Miscellaneous Analyses

SDG# KAL481

Analyses Performed By:
TestAmerica Laboratories
Burlington, Vermont

Report: # 10982R
Review Level: Tier III
Project: B0064539.0000.00500

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #KAL481 for samples collected in association with the Plainwell site. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	PCB	MET	MISC
TS40034	807163	Water	9/21/2009				X	X	X
TS40035	807164	Water	9/21/2009				X	X	X
TS40036	807165	Water	9/21/2009				X	X	X
TS40037	807166	Water	9/21/2009				X	X	X
TS40038	807167	Water	9/21/2009				X	X	X
TS40039	807168	Water	9/21/2009				X	X	X
TS40040	807169	Water	9/21/2009				X	X	X
TS40041	807170	Water	9/21/2009				X	X	X
TS40042	807171	Water	9/21/2009				X	X	X
TS31006	807172	Water	9/21/2009				X	X	X
TS40043	807422	Water	9/23/2009				X	X	X
TS40044	807423	Water	9/23/2009				X	X	X
TS40045	807424	Water	9/23/2009	TS40044			X	X	X
TS40046	807425	Water	9/23/2009				X	X	X
TS40047	807426	Water	9/23/2009	TS40046			X	X	X
TS40048	807427	Water	9/23/2009				X	X	X
TS40049	807644	Water	9/24/2009				X	X	X
TS40050	807645	Water	9/24/2009				X	X	X
TS31007	807646	Water	9/24/2009				X	X	X
TS31008	807647	Water	9/24/2009	TS31007			X	X	X

Note:

1. Miscellaneous parameters include total organic carbon (TOC), total suspended solids (TSS), total dissolved solids (TDS), chloride, sulfate, and alkalinity.
2. Matrix spike/matrix spike duplicate/laboratory duplicate was performed on sample locations TS31006 and TS40043.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to (United States Environmental Protection Agency) USEPA Method 8082. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999 and USEPA Region II (SOP HW-45, Revision 1).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
 - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
 - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
 - UB Compound considered non-detect at the listed value due to associated blank contamination.
 - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
 - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in this package has been derived using a procedure developed by TestAmerica as an attempt to improve the analytical process of calibration, identification and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear. While significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to straighten the curve and allow the use of response factors for calibration purposes.

During the initial calibration, a response factor is calculated for each peak in the individual Aroclors. A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of false positive and false negative peak identifications.

The determination of which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Silvon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which is less likely to be affected by interferences. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cooled @ 4 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. System Performance

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

A maximum RSD of 20% is allowed or a correlation coefficient greater than 0.99. Multiple-point calibrations were performed for all Aroclors.

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (15%).

All Aroclors associated with calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
TS31007 TS31008	CCV %D	Aroclor 1248	18.0%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient < 0.99	Non-detect	UJ
		Detect	J
Continuing Calibration	%D > 15% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D > 15% (decrease in sensitivity)	Non-detect	UJ
		Detect	J

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires the surrogate compounds must exhibit recoveries within the method established acceptance limits.

All surrogate recoveries reported from the primary column were within control limits.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the method established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the method established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

7. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the method established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

8. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS40044/ TS40045	All Aroclors	0.047 U	0.048 U	AC
TS40046/ TS40047	All Aroclors	0.048 U	0.047 U	AC
TS31007/ TS31008	All Aroclors	0.051 U	0.050 U	AC

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

9. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

All identified compounds met the specified criteria.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs; SW846 8082	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
GAS CHROMATOGRAPHY (GC/FID)						
Tier II Validation						
Holding times		X		X		
Reporting limits (units)		X		X		
Blanks						
A. Method blanks		X		X		
B. Field blanks		X		X		
Laboratory Control Sample (LCS) %R		X		X		
Laboratory Control Sample Duplicate(LCSD) %R					X	
LCS/LCSD Precision (RPD)					X	
Matrix Spike (MS) %R		X		X		
Matrix Spike Duplicate(MSD) %R		X		X		
MS/MSD Precision (RPD)		X		X		
Field Duplicate (RPD)		X		X		
Surrogate Spike Recoveries		X		X		
Dilution Factor		X		X		
Moisture Content		X		X		
Tier III Validation						
Initial calibration %RSDs		X		X		
Continuing calibration %Ds		X	X			
System performance and column resolution		X		X		
Compound identification and quantitation						
A. Quantitation Reports		X		X		
B. RT of sample compounds within the established RT windows		X		X		
C. Pattern identification		X		X		
D. Transcription/calculation errors present				X		
E. Reporting limits adjusted to reflect sample dilutions		X		X		

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010B, 9060, 300.0, 310.1 and SM2540. Data were reviewed in accordance with USEPA National Functional Guidelines of October 2004.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

- U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

- B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

- Quantitation (Q) Qualifiers

- E The reported value is estimated due to the presence of interference.

- N Spiked sample recovery is not within control limits.

- * Duplicate analysis is not within control limits.

- Validation Qualifiers

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

- UB Analyte considered non-detect at the listed value due to associated blank contamination.

- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010B	Water	180 days from collection to analysis	Cooled @ 4 °C; preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cooled @ 4 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the instrument detection limit (IDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL. No qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 for all non-ICP analytes and all initial calibration verification standard recoveries were within control limits.

All continuing calibration verification standard recoveries were within the control limit.

3.2 CRDL Check Standard

The CRDL check standard serves to verify the linearity of calibration of the analysis at the CRDL. The CRDL standard is not required for the analysis of aluminum (Al), barium (Ba), calcium (Ca), iron (Fe), magnesium (Mg), sodium (Na), and potassium (K). The criteria used to evaluate the CRDL standard

analysis are presented below in the CRDL standards evaluation table.

All CRDL standard recoveries were within control limits.

3.3 ICP Interference Control Sample (ICS)

The ICS verifies the laboratories interelement and background correction factors.

All ICS exhibited recoveries within the control limits.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory qualifier "N" will be removed.

The MS analysis performed on sample locations TS31006 and TS400431 exhibited recoveries within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The laboratory duplicate sample results exhibited RPD within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS40044/ TS40045	Calcium	105000	103000	1.9 %
	Magnesium	24900	24500	1.6 %
	Potsassium	2020 B	2060 B	AC
	Sodium	53800	53200	1.1 %
TS40046/ TS40047	Calcium	160000	159000	0.6 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS31007/ TS31008	Magnesium	22900	22900	0 %
	Potsassium	1350 B	1310 B	AC
	Sodium	58300	58300	0 %
	Calcium	78400	77300	1.4 %
	Magnesium	24900	24600	1.2 %
	Potsassium	2810 B	2710 B	AC
	Sodium	36000	35600	1.1 %

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

The serial dilution performed on sample location TS31006 exhibited a %D within the control limit.

A serial dilution was also performed on sample location Ts40043. All serial dilutions were within control limits, with the exception of the analytes presented in the following table.

Sample Locations	Analytes	Serial Dilution (%D)
TS40043	Calcium	10.3%
	Magnesium	11.9%
	Sodium	11.4%

The criteria used to evaluate the serial dilution are presented in the following table. In the case of a serial dilution deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

8. Furnace Analysis QC

No furnace analyses were performed on the samples.

9. Method of Standard Additions (MSA)

No samples were analyzed following the method of standard additions.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW-846 6000/7000	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP)						
Atomic Absorption – Manual Cold Vapor (CV)						
Tier II Validation						
Holding Times		X		X		
Reporting limits (units)		X		X		
Blanks						
A. Instrument Blanks		X		X		
B. Method Blanks		X		X		
C. Equipment/Field Blanks		X		X		
Laboratory Control Sample (LCS)		X		X		
Matrix Spike (MS) %R		X		X		
Matrix Spike Duplicate (MSD) %R		X		X		
MS/MSD Precision (RPD)		X		X		
Field/Lab Duplicate (RPD)		X		X		
ICP Serial Dilution		X	X			
Reporting Limit Verification		X		X		
Raw Data		X		X		
Tier III Validation						
Initial Calibration Verification		X		X		
Continuing Calibration Verification		X		X		
CRDL Standard		X		X		
ICP Interference Check		X		X		
Transcription/calculation errors present		X		X		
Reporting limits adjusted to reflect sample dilutions		X		X		

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Total Organic Carbon by EPA 9060	Water	28 days from collection to analysis	Cooled @ 4 °C; preserved to a pH of less than 2.
Total Dissolved Solids By EPA 160.1	Water	7 days from collection to analysis	Cooled @ 4 °C.
Total Suspended Solids By EPA 160.2	Water	7 days from collection to analysis	Cooled @ 4 °C.
Chloride by EPA 300.0	Water	28 days from collection to analysis	Cooled @ 4 °C.
Sulfate by EPA 300.0	Water	28 days from collection to analysis	Cooled @ 4 °C.
Alkalinity by EPA 310.1	Water	14 days from collection to analysis	Cooled @ 4 °C.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL. No qualification of the sample results was required.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory qualifier "N" will be removed.

The MS analysis performed on sample locations TS31006, TS40043, and TS31008 exhibited recoveries within the control limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The laboratory duplicate sample results exhibited a RPD within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 50% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
TS40044/ TS40045	TOC	3.7	4.1	AC
	TDS	535	528	1.3%
	TSS	13.5	13.5	0%
	Chloride	82	83	1.2%
	Sulfate	62	63	1.6%
	Alkalinity	270	280	3.6%
TS40046/ TS40047	TOC	12.2	11.9	2.4%
	TDS	754	754	0%
	TSS	19.8	20.8	4.4%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Chloride	110	110	0%
	Sulfate	140	140	0%
	Alkalinity	310	310	0%
TS31007/ TS31008	TOC	4.0	4.2	AC
	TDS	396	407	0.2%
	TSS	4.6	4.5	2.1%
	Chloride	66	61	7.8%
	Sulfate	35	32	8.9%
	Alkalinity	230	230	0%

AC Acceptable
U Not detected

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA Lloyd Kahn	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Field blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R					X
MS/MSD Precision (RPD)					X
Lab/Field Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Raw Data		X		X	
Transcription/calculation errors present				X	
Reporting limits adjusted to reflect sample dilutions		X		X	

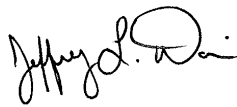
%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

VALIDATION PERFORMED

BY:

Jeffrey L. Davin

SIGNATURE:



DATE: October 26, 2009

PEER REVIEW: Dennis Capria

DATE: November 6, 2009

**CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS**

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40034

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807163

Phase Weight: 1020. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.049	U
11104-28-2	Aroclor-1221	0.049	U
11141-16-5	Aroclor-1232	0.049	U
53469-21-9	Aroclor-1242	0.049	U
12672-29-6	Aroclor-1248	0.049	U
11097-69-1	Aroclor-1254	0.049	U
11096-82-5	Aroclor-1260	0.049	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40035

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807164

Phase Weight: 965. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.052	U
11104-28-2	Aroclor-1221	0.052	U
11141-16-5	Aroclor-1232	0.052	U
53469-21-9	Aroclor-1242	0.052	U
12672-29-6	Aroclor-1248	0.052	U
11097-69-1	Aroclor-1254	0.052	U
11096-82-5	Aroclor-1260	0.052	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40036

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807165

Phase Weight: 1035. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40037

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807166

Phase Weight: 1035. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40038

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807167

Phase Weight: 1055. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40039

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807168

Phase Weight: 1005. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40040

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807169

Phase Weight: 1035. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40041

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807170

Phase Weight: 1045. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

T240042

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807171

Phase Weight: 1055. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids:

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS31006

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807172

Phase Weight: 1045. (mL)

Date Received: 09/23/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/24/09

Dilution Factor: 1.0

Date Analyzed: 10/06/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40043

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807422

Phase Weight: 1040. (mL)

Date Received: 09/24/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40044

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807423

Phase Weight: 1055. (mL)

Date Received: 09/24/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40045

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807424

Phase Weight: 1040. (mL)

Date Received: 09/24/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40046

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807425

Phase Weight: 1045. (mL)

Date Received: 09/24/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.048	U
11104-28-2	Aroclor-1221	0.048	U
11141-16-5	Aroclor-1232	0.048	U
53469-21-9	Aroclor-1242	0.048	U
12672-29-6	Aroclor-1248	0.048	U
11097-69-1	Aroclor-1254	0.048	U
11096-82-5	Aroclor-1260	0.048	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40047

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807426

Phase Weight: 1060. (mL)

Date Received: 09/24/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40048

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807427

Phase Weight: 1010. (mL)

Date Received: 09/24/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40049

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807644

Phase Weight: 1000. (mL)

Date Received: 09/25/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS40050

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807645

Phase Weight: 1055. (mL)

Date Received: 09/25/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.047	U
11104-28-2	Aroclor-1221	0.047	U
11141-16-5	Aroclor-1232	0.047	U
53469-21-9	Aroclor-1242	0.047	U
12672-29-6	Aroclor-1248	0.047	U
11097-69-1	Aroclor-1254	0.047	U
11096-82-5	Aroclor-1260	0.047	U

FORM 1
AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS31007

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807646

Phase Weight: 990. (mL)

Date Received: 09/25/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.051	U
11104-28-2	Aroclor-1221	0.051	U
11141-16-5	Aroclor-1232	0.051	U
53469-21-9	Aroclor-1242	0.051	U
12672-29-6	Aroclor-1248	0.051	U
11097-69-1	Aroclor-1254	0.051	U
11096-82-5	Aroclor-1260	0.051	U

FORM 1
AROCOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

TS31008

Lab Name: TestAmerica Burlington

Lab Code: STLV

Contract: 27000

Case: KZOO

SDG: KAL481

Phase Type: WATER

Lab Sample ID: 807647

Phase Weight: 1000. (mL)

Date Received: 09/25/09

Injection Volume: 1.0 (uL)

Date Extracted: 09/27/09

Dilution Factor: 1.0

Date Analyzed: 10/07/09

% Solids: _____

Sulfur Clean-up: N (Y/N)

CAS NO.	COMPOUND	CONCENTRATION ug/L	QUALIFIER
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

T240042

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807171
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	110000		<u>EJ</u>	P
7439-95-4	Magnesium	26700		<u>EJ</u>	P
7440-23-5	Sodium	56100		<u>EJ</u>	P
7440-09-7	Potassium	2660	<u>B</u>		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS31006

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807172
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	76000		E	P
7439-95-4	Magnesium	24300		E	P
7440-23-5	Sodium	36400		E	P
7440-09-7	Potassium	3020	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS31007

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807646
Level (low/med): LOW Date Received: 09/25/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	78400		E J	P
7439-95-4	Magnesium	24900		E J	P
7440-23-5	Sodium	36000		E J	P
7440-09-7	Potassium	2810	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS31008

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807647
Level (low/med): LOW Date Received: 09/25/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	77300		EJ	P
7439-95-4	Magnesium	24600		EJ	P
7440-23-5	Sodium	35600		EJ	P
7440-09-7	Potassium	2710	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40034

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807163
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	157000		EJ	P
7439-95-4	Magnesium	34400		EJ	P
7440-23-5	Sodium	57500		EJ	P
7440-09-7	Potassium	3060	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40035

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807164
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	125000		<u>E J</u>	P
7439-95-4	Magnesium	29600		<u>E J</u>	P
7440-23-5	Sodium	74900		<u>E J</u>	P
7440-09-7	Potassium	2080	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40036

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807165
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	104000		EJ	P
7439-95-4	Magnesium	26600		EJ	P
7440-23-5	Sodium	94100		EJ	P
7440-09-7	Potassium	2070	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40037

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807166
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	127000	E	J	P
7439-95-4	Magnesium	30900	E	J	P
7440-23-5	Sodium	66900	E	J	P
7440-09-7	Potassium	2220	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40038

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807167
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	129000		EJ	P
7439-95-4	Magnesium	28000		EJ	P
7440-23-5	Sodium	67900		EJ	P
7440-09-7	Potassium	1960	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40039

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807168
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	150000	E	J	P
7439-95-4	Magnesium	29300	E	J	P
7440-23-5	Sodium	65500	E	J	P
7440-09-7	Potassium	2010	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40040

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807169
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	114000		EJ	P
7439-95-4	Magnesium	23200		EJ	P
7440-23-5	Sodium	63400		EJ	P
7440-09-7	Potassium	1770	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40041

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807170
Level (low/med): LOW Date Received: 09/23/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	87400	E	J	P
7439-95-4	Magnesium	23000	E	J	P
7440-23-5	Sodium	76500	E	J	P
7440-09-7	Potassium	2200	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40043

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807422
Level (low/med): LOW Date Received: 09/24/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	98600		EJ	P
7439-95-4	Magnesium	23300		EJ	P
7440-23-5	Sodium	24100		EJ	P
7440-09-7	Potassium	2590	B		P

Color Before: colorless Clarity Before: clear Texture: _____

Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40044

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807423
Level (low/med): LOW Date Received: 09/24/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	105000		EJ	P
7439-95-4	Magnesium	24900		EJ	P
7440-23-5	Sodium	53800		EJ	P
7440-09-7	Potassium	2020	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40045

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807424
Level (low/med): LOW Date Received: 09/24/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	103000		EJ	P
7439-95-4	Magnesium	24500		EJ	P
7440-23-5	Sodium	53200		EJ	P
7440-09-7	Potassium	2060	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40046

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807425
Level (low/med): LOW Date Received: 09/24/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	160000	EJ		P
7439-95-4	Magnesium	22900	EJ		P
7440-23-5	Sodium	58300	EJ		P
7440-09-7	Potassium	1350	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40047

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807426
Level (low/med): LOW Date Received: 09/24/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	159000		E J	P
7439-95-4	Magnesium	22900		E J	P
7440-23-5	Sodium	58300		E J	P
7440-09-7	Potassium	1310	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40048

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807427
Level (low/med): LOW Date Received: 09/24/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	93200		E J	P
7439-95-4	Magnesium	21900		E J	P
7440-23-5	Sodium	67000		E J	P
7440-09-7	Potassium	1770	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40049

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807644
Level (low/med): LOW Date Received: 09/25/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	107000		EJ	P
7439-95-4	Magnesium	26900		EJ	P
7440-23-5	Sodium	74400		EJ	P
7440-09-7	Potassium	2680	B		P

Color Before: colorless Clarity Before: clear Texture: _____Color After: colorless Clarity After: clear Artifacts: _____Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TS40050

Lab Name: TestAmerica Burlington Contract: 29000
Lab Code: STLV Case No.: KZOO SAS No.: _____ SDG No.: KAL481
Matrix (soil/water): WATER Lab Sample ID: 807645
Level (low/med): LOW Date Received: 09/25/09
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-70-2	Calcium	92100		EJ	P
7439-95-4	Magnesium	22100		EJ	P
7440-23-5	Sodium	41000		EJ	P
7440-09-7	Potassium	1180	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____
Comments: _____

WET CHEMISTRY

Sample Report Summary

TS40034

Contract: 64539.0.005

SDG No.: KAL481

Case No.: KZ00

Lab Sample ID: 807163

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	811	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	13.0	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	7.3	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40035

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807164

Matrix: WATER

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	671	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	14.0	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	5.4	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40036

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807165

Matrix: WATER

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	637	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	8.9	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	2.7	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40037

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807166

Matrix: WATER

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	664	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	13.8	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	3.9	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40038

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807167

Matrix: WATER

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	662	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	15.8	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	4.3	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40039

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807168

Matrix: WATER

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	739	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	27.7	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	5.6	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40040

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807169

Matrix: WATER

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	583	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	17.1	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	5.1	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40041

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807170

Matrix: WATER

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	526	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	5.8	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	2.1	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

T240042

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807171

Matrix: WATER

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	583	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	6.2	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	5.2	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS31006

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807172

Matrix: WATER

Client: BBLKAL

Date Received: 09/23/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	391	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	2.8	
5310	Organic Carbon, Total	09/24/09	BLKTO092409A	mg/L	1	1.0	4.7	

WET CHEMISTRY

Sample Report Summary

TS40043

SDG No.: KAL481

Lab Sample ID: 807422

Date Received: 09/24/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	437	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	5.2	
5310	Organic Carbon, Total	09/25/09	BLKTO092509A	mg/L	1	1.0	7.8	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40044

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807423

Matrix: WATER

Client: BBLKAL

Date Received: 09/24/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	535	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	13.5	
5310	Organic Carbon, Total	09/25/09	BLKTO092509A	mg/L	1	1.0	3.7	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40046

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807425

Matrix: WATER

Client: BBLKAL

Date Received: 09/24/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	754	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	19.9	
5310	Organic Carbon, Total	09/25/09	BLKTO092509A	mg/L	1	1.0	12.2	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40047

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807426

Matrix: WATER

Client: BBLKAL

Date Received: 09/24/09

% Solids:

[illegible]

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40048

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807427

Matrix: WATER

Client: BBLKAL

Date Received: 09/24/09

% Solids:

[illegible]

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS40050

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807645

Matrix: WATER

Client: BBLKAL

Date Received: 09/25/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	446	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	12.9	
5310	Organic Carbon, Total	09/29/09	BLKTO092909B	mg/L	1	1.0	3.3	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS31007

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807646

Matrix: WATER

Client: BBLKAL

Date Received: 09/25/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	396	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	4.6	
5310	Organic Carbon, Total	09/29/09	BLKTO092909B	mg/L	1	1.0	4.0	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TS31008

Lab Name: TestAmerica Burlington

Contract: 64539.0.005

SDG No.: KAL481

Lab Code: TALVT

Case No.: KZ00

Lab Sample ID: 807647

Matrix: WATER

Client: BBLKAL

Date Received: 09/25/09

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
2540	Total Dissolved Solids	09/28/09	BLKDS092809A	mg/L	1	5.0	407	
2540	Total Suspended Solids	09/28/09	BLKTS092809A	mg/L	0	0.50	4.5	
5310	Organic Carbon, Total	09/29/09	BLKTO092909B	mg/L	1	1.0	4.2	

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID:TS40034
Lab Sample ID: 500-21398-1

Date Sampled: 09/21/2009 1503
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
Chloride	91	mg/L	0.92	4.0	20
Sulfate	150	mg/L	1.3	4.0	20
Method: 310.1					
Alkalinity	370	mg/L	1.1	5.0	1.0

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Job Number: 500-21398-1

Client Sample ID:TS40035
Lab Sample ID: 500-21398-2

Date Sampled: 09/21/2009 1545
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	10/01/2009	0933	
Chloride	130	mg/L	0.92	4.0	20
Sulfate	57	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	09/30/2009	1526	
Alkalinity	360	mg/L	1.1	5.0	1.0

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Suite 11
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Job Number: 500-21398-1

Client Sample ID:TS40036
Lab Sample ID: 500-21398-3

Date Sampled:09/21/2009 1718
Date Received:09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0 Sulfate	57	mg/L	Date Analyzed: 10/01/2009 1.3	0948 4.0	20
Method: 300.0 Chloride	160	mg/L	Date Analyzed: 10/02/2009 2.3	1458 10	50
Method: 310.1 Alkalinity	280	mg/L	Date Analyzed: 09/30/2009 1.1	1533 5.0	1.0

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South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID:TS40037
Lab Sample ID: 500-21398-4

Date Sampled: 09/22/2009 1024
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	10/01/2009	1002	
Chloride	110	mg/L	0.92	4.0	20
Sulfate	81	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	09/30/2009	1542	
Alkalinity	330	mg/L	1.1	5.0	1.0

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30 Community Drive
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South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID:TS40038
Lab Sample ID: 500-21398-5

Date Sampled: 09/22/2009 0935
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0			Date Analyzed: 10/01/2009	1016	
Chloride	140	mg/L	0.92	4.0	20
Sulfate	88	mg/L	1.3	4.0	20
Method: 310.1			Date Analyzed: 09/30/2009	1549	
Alkalinity	300	mg/L	1.1	5.0	1.0

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30 Community Drive
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South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID:TS40039
Lab Sample ID: 500-21398-6

Date Sampled:09/22/2009 1140
Date Received:09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	10/01/2009	1031	
Chloride	120	mg/L	0.92	4.0	20
Sulfate	130	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	09/30/2009	1611	
Alkalinity	320	mg/L	1.1	5.0	1.0

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Suite 11
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Job Number: 500-21398-1

Client Sample ID:TS40040
Lab Sample ID: 500-21398-7

Date Sampled:09/22/2009 1146
Date Received:09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0			Date Analyzed: 10/01/2009	1045	
Chloride	120	mg/L	0.92	4.0	20
Sulfate	80	mg/L	1.3	4.0	20
Method: 310.1			Date Analyzed: 09/30/2009	1618	
Alkalinity	270	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
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30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID: TS40041
Lab Sample ID: 500-21398-8

Date Sampled: 09/22/2009 1449
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
Chloride	130	mg/L	0.92	4.0	20
Sulfate	28	mg/L	1.3	4.0	20
Method: 310.1					
Alkalinity	250	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
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30 Community Drive
Suite 11
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Job Number: 500-21398-1

Client Sample ID:TS40042
Lab Sample ID: 500-21398-9

Date Sampled: 09/22/2009 1455
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	10/01/2009	1113	
Chloride	91	mg/L	0.92	4.0	20
Sulfate	86	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	09/30/2009	1634	
Alkalinity	270	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
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30 Community Drive
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Job Number: 500-21398-1

Client Sample ID: TS31006
Lab Sample ID: 500-21398-10

Date Sampled: 09/21/2009 1430
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
Chloride	65	mg/L	0.92	4.0	20
Sulfate	33	mg/L	1.3	4.0	20
Method: 310.1					
Alkalinity	220	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID:TS40043
Lab Sample ID: 500-21398-11

Date Sampled: 09/23/2009 0933
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0			Date Analyzed: 10/01/2009	1239	
Chloride	47	mg/L	0.92	4.0	20
Sulfate	34	mg/L	1.3	4.0	20
Method: 310.1			Date Analyzed: 09/30/2009	1818	
Alkalinity	290	mg/L	1.1	5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID: TS40044
Lab Sample ID: 500-21398-12

Date Sampled: 09/23/2009 0945
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	10/01/2009	1322	
Chloride	82	mg/L	0.92	4.0	20
Sulfate	62	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	09/30/2009	1656	
Alkalinity	270	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID:TS40045
Lab Sample ID: 500-21398-13

Date Sampled: 09/23/2009 0000
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
Chloride	83	mg/L	0.92	4.0	20
Sulfate	63	mg/L	1.3	4.0	20
Method: 310.1					
Alkalinity	280	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID: TS40046
Lab Sample ID: 500-21398-14

Date Sampled: 09/23/2009 1148
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
Chloride	110	mg/L	0.92	4.0	20
Sulfate	140	mg/L	1.3	4.0	20
Method: 310.1					
Alkalinity	310	mg/L	1.1	5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID: TS40047
Lab Sample ID: 500-21398-15

Date Sampled: 09/23/2009 0000
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
Chloride	110	mg/L	0.92	4.0	20
Sulfate	140	mg/L	1.3	4.0	20
Method: 310.1					
Alkalinity	310	mg/L	1.1	5.0	1.0

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TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID: TS40048
Lab Sample ID: 500-21398-16

Date Sampled: 09/23/2009 1250
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	10/01/2009	1448	
Chloride	120	mg/L	0.92	4.0	20
Sulfate	27	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	09/30/2009	1741	
Alkalinity	270	mg/L	1.1	5.0	1.0

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30 Community Drive
Suite 11
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Job Number: 500-21398-1

Client Sample ID:TS40049
Lab Sample ID: 500-21398-17

Date Sampled:09/24/2009 1040
Date Received:09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	10/01/2009	1503	
Chloride	130	mg/L	0.92	4.0	20
Sulfate	55	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	09/30/2009	1748	
Alkalinity	270	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID:TS40050
Lab Sample ID: 500-21398-18

Date Sampled: 09/24/2009 1141
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	10/01/2009	1517	
Chloride	66	mg/L	0.92	4.0	20
Sulfate	50	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	09/30/2009	1756	
Alkalinity	250	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID: TS31007
Lab Sample ID: 500-21398-19

Date Sampled: 09/24/2009 1400
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
		Date Analyzed:	10/01/2009	1531	
Chloride	66	mg/L	0.92	4.0	20
Sulfate	35	mg/L	1.3	4.0	20
Method: 310.1					
		Date Analyzed:	09/30/2009	1834	
Alkalinity	230	mg/L	1.1	5.0	1.0

Mr. Kirk F Young
TestAmerica Laboratories, Inc.
30 Community Drive
Suite 11
South Burlington, VT 05403

Job Number: 500-21398-1

Client Sample ID: TS31008
Lab Sample ID: 500-21398-20

Date Sampled: 09/24/2009 0000
Date Received: 09/29/2009 1030
Client Matrix: Water

Analyte	Result/Qualifier	Unit	MDL	RL	Dilution
Method: 300.0					
Chloride	61	mg/L	0.92	4.0	20
Sulfate	32	mg/L	1.3	4.0	20
Method: 310.1					
Alkalinity	230	mg/L	1.1	5.0	1.0

[illegible]

ID#: 13983

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:	Contact & Company Name: ERIC HRITSUK		Telephone: 312 332 4937 x24		Preservative	E	A	E	E	E	C			
	Address: 30 W. MONROE ST		Fax:		Filtered (✓)									
	City State Zip CHICAGO IL 60603		E-mail Address: ERIC.HRITSUK@ARCADIS-US.COM		# of Containers	2	2	1	1	1	1			
					Container Information	2	1	3	9	3	3			
Project Name/Location (City, State): PLAINWELL GW SAMPLING					Project #: R0064539.0000.00500					PARAMETER ANALYSIS & METHOD			Keys Preservation Key: A. H ₂ SO ₄ B. HCL C. HNO ₃ D. NaOH E. None F. Other: G. Other: H. Other: Matrix Key: SO - Soil W - Water T - Tissue Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: 10. Other: SE - Sediment SL - Sludge A - Air NL - NAPL/Oil SW - Sample Wipe Other:	
Sampler's Printed Name: MICHAEL KOHAGEN					Sampler's Signature: <i>[Signature]</i>									
Sample ID		Collection		Type (✓)	Matrix									
	Date	Time	Comp	Grab										
TS40034	9/21/09	1503		✓	W	X	X	X	X	X	X			
TS40035	9/21/09	1545		✓	W	X	X	X	X	X	X			
TS40036	9/21/09	1718		✓	W	X	X	X	X	X	X			
TS40037	9/22/09	1024		✓	W	X	X	X	X	X	X			
TS40038	9/22/09	0935		✓	W	X	X	X	X	X	X			
TS40039	9/22/09	1140		✓	W	X	X	X	X	X	X			
TS40040	9/22/09	1146		✓	W	X	X	X	X	X	X			
TS40041	9/22/09	1449		✓	W	X	X	X	X	X	X			
TS40042	9/22/09	1455		✓	W	X	X	X	X	X	X			
TS31006	9/21/09	1430		✓	W	X	X	X	X	X	X	MS/MSP		
Special Instructions/Comments:														
<input type="checkbox"/> Special QA/QC Instructions(✓):														
Laboratory Information and Receipt						Relinquished By		Received By		Relinquished By		Laboratory Received By		
Lab Name: TAL BURLINGTON		Cooler Custody Seal (✓) <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Printed Name: MICHAEL KOHAGEN		Printed Name:		Printed Name:		Printed Name:		Printed Name: Chris Kolb		
<input checked="" type="checkbox"/> Cooler packed with ice (✓)				Signature: <i>[Signature]</i>		Signature:		Signature:		Signature:		Signature: <i>[Signature]</i>		
Specify Turnaround Requirements: STANDARD		Sample Receipt: 5.31.3.814.714.2		Firm: ARCADIS		Firm/Courier:		Firm/Courier:		Firm/Courier:		Firm: TA		
Shipping Tracking #: FedEx		Condition/Cooler Temp:		Date/Time: 9/22/09 1730		Date/Time:		Date/Time:		Date/Time:		Date/Time: 09/23/09 1420		

Send Results To:	Contact & Company Name:	Telephone:	Preservative	E	A	E	E	E	C			KEYS Container Information Key: A. H ₂ SO ₄ B. HCL C. NaOH D. HNO ₃ E. None F. G. H.				
	Eric Hritsuk	312-332-4937	Filtered (✓)										1. 40 mL VOA 2. 1 L Amber 3. 125 mL Plastic 4. 250 mL Plastic 5. 500 mL Plastic 6. 1 L Plastic 7. 2 oz. Glass 8. 4 oz. Glass 9. 8 oz. Glass 10.			
	Address:	Fax:	# of Containers	2	2	1	1	1	1							
	30 W Monroe St	312-332-4434	Container Information	2	1	3	9	3	3							
	City State Zip	E-mail Address:	PARAMETER ANALYSIS & METHOD													
	Chicago IL, 60603 .		Total PCB	TOC	TDS	TSS	Chloride, Sulfate, Alkalinity	Total Metals								
Project Name/Location (City, State):			Project #:													
Plainwell TCRA Mi			B0064539.0000.00001													
Sampler's Printed Name:			Sampler's Signature:													
Michael Kohagen																
Sample ID	Collection Date Time	Type Comp Grab	Matrix	Total PCB	TOC	TDS	TSS	Chloride, Sulfate, Alkalinity	Total Metals							
TS40049	9/24/09 1040	X W		X X	X X	X X	X X	X X	X X							
TS40050	9/24/09 1141	X W		X X	X X	X X	X X	X X	X X							
TS31007	9/24/09 1400	X W		X X	X X	X X	X X	X X	X X							
TS31008	9/24/09	X W		X X	X X	X X	X X	X X	X X							
Special Instructions/Comments:																
<input type="checkbox"/> Special QA/QC Instructions (✓)																
Laboratory Information and Receipt				Relinquished By				Received By				Laboratory Received By				
Lab Name:		Cooler Custody Seal		Printed Name:				Printed Name:				Printed Name:				
Test America - South Burlington				Michael Kohagen								Chris Kolb				
<input checked="" type="checkbox"/> Cooler packed with ice (✓)		<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Signature:				Signature:				Signature:				
		<input checked="" type="checkbox"/> N/A See Project +														
Specify Turnaround Requirements:		Sample Receipt:		Firm: Arcadis				Firm:				Firm:				
Standard		CK 9/25/09										TA				
Fed-Ex Tracking #:		Condition/Cooler Temp:		Date/Time:				Date/Time:				Date/Time:				
0		1.7, 2.1		092409 1800								9/25/09 0950				

Attachment 5

Analytical Reports for MDEQ Split
Samples

Attachment 5A

Analytical Reports for MDEQ Split
Samples – Quarter 2 – June/July
2009

PAGE 1 OF 1

2190 Technology Drive, Schenectady, NY 12308
Telephone (518) 346-4592 Fax (518) 381-6055
www.nealab.com information@nealab.com

LRF #

<09070006P1>



090700061

☐ RETURN TO CLIENT
☐ DISPOSAL BY NORTHEAST ANALYTICAL
☐ ARCHIVAL BY NORTHEAST ANALYTICAL

Additional charges incurred for disposal (if hazardous) or archival. Call for details.

[illegible]

* CLP LIKE DATA PACKAGE ADDITIONAL COST



CERTIFICATE OF ANALYSIS
7/3/2009
CAMP, DRESSER & MCKEE
ONE WOODWARD AVE., SUITE 1500
DETROIT, MI 48226
CONTACT: TODD KING



CUSTOMER ID: PGW-MW12-01
MATRIX: WATER
DATE RECEIVED: 7/1/2009 **TIME:** 10:08
SAMPLED BY: R. MULCRONE
CUSTOMER PO: N/A

NEA ID: AM09125 **NEA LRF:** 09070006-01
DATE SAMPLED: 06/29/2009 **TIME:** 14:00
PROJECT: PTCRA- PLAINWELL INVESTIGATION
LOCATION: PLAINWELL, MI
LAB ELAP#: 11078

PARAMETER PERFORMED	RESULTS	PQL	UNITS	DATE ANALYZED	FLAGS
SW-846 Method 8082					
Aroclor 1016	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1221	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1232	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1242	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1248	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1254	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1260	ND	0.0250	ug/L	07/02/2009	U
Total PCB Amount	ND				U

Notes: ND (Not Detected). Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit). Denotes lowest analyte concentration reportable for the sample.
Note: There were several non-target peaks.

AUTHORIZED SIGNATURE:

William A. Kotas
Sr. Laboratory Representative

Robert E. Wagner
Laboratory Director



CERTIFICATE OF ANALYSIS
7/3/2009
CAMP, DRESSER & MCKEE
ONE WOODWARD AVE., SUITE 1500
DETROIT, MI 48226
CONTACT: TODD KING



CUSTOMER ID: PGW-MW12-02
MATRIX: WATER
DATE RECEIVED: 7/1/2009 **TIME:** 10:08
SAMPLED BY: R. MULCRONE
CUSTOMER PO: N/A

NEA ID: AM09126 **NEA LRF:** 09070006-02
DATE SAMPLED: 06/29/2009 **TIME:** 14:00
PROJECT: PTCRA- PLAINWELL INVESTIGATION
LOCATION: PLAINWELL, MI
LAB ELAP#: 11078

PARAMETER PERFORMED	RESULTS	PQL	UNITS	DATE ANALYZED	FLAGS
SW-846 Method 8082					
Aroclor 1016	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1221	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1232	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1242	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1248	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1254	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1260	ND	0.0250	ug/L	07/02/2009	U
Total PCB Amount	ND				U

Notes: ND (Not Detected). Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit). Denotes lowest analyte concentration reportable for the sample.
Note: There were few non-target peaks.

AUTHORIZED SIGNATURE:

William A. Kotas
Sr. Laboratory Representative

Robert E. Wagner
Laboratory Director



CERTIFICATE OF ANALYSIS
7/3/2009
CAMP, DRESSER & MCKEE
ONE WOODWARD AVE., SUITE 1500
DETROIT, MI 48226
CONTACT: TODD KING



CUSTOMER ID: PGW-MW12-02
MATRIX: WATER
DATE RECEIVED: 7/1/2009 TIME: 10:08
SAMPLED BY: R. MULCRONE
CUSTOMER PO: N/A

NEA ID: AM09127 NEA LRF: 09070006-03
DATE SAMPLED: 06/29/2009 TIME: 14:01
PROJECT: PTCRA- PLAINWELL INVESTIGATION
LOCATION: PLAINWELL, MI
LAB ELAP#: 11078

PARAMETER PERFORMED	RESULTS	PQL	UNITS	DATE ANALYZED	FLAGS
SW-846 Method 8082					
Aroclor 1016	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1221	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1232	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1242	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1248	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1254	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1260	ND	0.0250	ug/L	07/02/2009	U
Total PCB Amount	ND				U

Notes: ND (Not Detected). Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit). Denotes lowest analyte concentration reportable for the sample.
Note: There were few non-target peaks.

AUTHORIZED SIGNATURE:

William A. Kotas
Sr. Laboratory Representative

Robert E. Wagner
Laboratory Director



CERTIFICATE OF ANALYSIS
7/3/2009
CAMP, DRESSER & MCKEE
ONE WOODWARD AVE., SUITE 1500
DETROIT, MI 48226
CONTACT: TODD KING



CUSTOMER ID: PGW-MW10-01
MATRIX: WATER
DATE RECEIVED: 7/1/2009 **TIME:** 10:08
SAMPLED BY: R. MULCRONE
CUSTOMER PO: N/A

NEA ID: AM09128 **NEA LRF:** 09070006-04
DATE SAMPLED: 06/30/2009 **TIME:** 11:55
PROJECT: PTCRA- PLAINWELL INVESTIGATION
LOCATION: PLAINWELL, MI
LAB ELAP#: 11078

PARAMETER PERFORMED	RESULTS	PQL	UNITS	DATE ANALYZED	FLAGS
SW-846 Method 8082					
Aroclor 1016	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1221	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1232	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1242	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1248	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1254	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1260	ND	0.0250	ug/L	07/02/2009	U
Total PCB Amount	ND				U

Notes: ND (Not Detected). Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit). Denotes lowest analyte concentration reportable for the sample.
Note: There were several non-target peaks.

AUTHORIZED SIGNATURE:

William A. Kotas
Sr. Laboratory Representative

Robert E. Wagner
Laboratory Director



CERTIFICATE OF ANALYSIS
7/3/2009
CAMP, DRESSER & MCKEE
ONE WOODWARD AVE., SUITE 1500
DETROIT, MI 48226
CONTACT: TODD KING



CUSTOMER ID: PGW-MW10-03
MATRIX: WATER
DATE RECEIVED: 7/1/2009 **TIME:** 10:08
SAMPLED BY: R. MULCRONE
CUSTOMER PO: N/A

NEA ID: AM09129 **NEA LRF:** 09070006-05
DATE SAMPLED: 06/30/2009 **TIME:** 11:55
PROJECT: PTCRA- PLAINWELL INVESTIGATION
LOCATION: PLAINWELL, MI
LAB ELAP#: 11078

PARAMETER PERFORMED	RESULTS	PQL	UNITS	DATE ANALYZED	FLAGS
SW-846 Method 8082					
Aroclor 1016	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1221	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1232	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1242	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1248	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1254	ND	0.0250	ug/L	07/02/2009	U
Aroclor 1260	ND	0.0250	ug/L	07/02/2009	U
Total PCB Amount	ND				U

Notes: ND (Not Detected). Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit). Denotes lowest analyte concentration reportable for the sample.
Note: There were several non-target peaks.

AUTHORIZED SIGNATURE:

William A. Kotas
Sr. Laboratory Representative

Robert E. Wagner
Laboratory Director

Attachment 5B

Analytical Reports for MDEQ Split
Samples – Quarter 3 – September
2009



CERTIFICATE OF ANALYSIS
7/9/2009
CAMP, DRESSER & MCKEE
ONE WOODWARD AVE., SUITE 1500
DETROIT, MI 48226
CONTACT: TODD KING



CUSTOMER ID: PGW-MW6-01
MATRIX: WATER
DATE RECEIVED: 7/2/2009 **TIME:** 10:03
SAMPLED BY: R. MULCRONE
CUSTOMER PO: N/A

NEA ID: AM09194 **NEA LRF:** 09070017-01
DATE SAMPLED: 07/01/2009 **TIME:** 13:55
PROJECT: PTCRA- PLAINWELL INVESTIGATION
LOCATION: PLAINWELL, MI
LAB ELAP#: 11078

PARAMETER PERFORMED	RESULTS	PQL	UNITS	DATE ANALYZED	FLAGS
SW-846 Method 8082					
Aroclor 1016	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1221	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1232	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1242	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1248	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1254	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1260	ND	0.0250	ug/L	07/04/2009	U
Total PCB Amount	ND				U

Notes: ND (Not Detected). Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit). Denotes lowest analyte concentration reportable for the sample.
Note: There were several non-target peaks.

AUTHORIZED SIGNATURE:

William A. Kotas
Sr. Laboratory Representative

Robert E. Wagner
Laboratory Director



CERTIFICATE OF ANALYSIS
7/9/2009
CAMP, DRESSER & MCKEE
ONE WOODWARD AVE., SUITE 1500
DETROIT, MI 48226
CONTACT: TODD KING



CUSTOMER ID: PGW-MW1-01
MATRIX: WATER
DATE RECEIVED: 7/2/2009 TIME: 10:03
SAMPLED BY: R. MULCRONE
CUSTOMER PO: N/A

NEA ID: AM09195 NEA LRF: 09070017-02
DATE SAMPLED: 07/01/2009 TIME: 15:10
PROJECT: PTCRA- PLAINWELL INVESTIGATION
LOCATION: PLAINWELL, MI
LAB ELAP#: 11078

PARAMETER PERFORMED	RESULTS	PQL	UNITS	DATE ANALYZED	FLAGS
SW-846 Method 8082					
Aroclor 1016	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1221	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1232	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1242	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1248	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1254	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1260	ND	0.0250	ug/L	07/04/2009	U
Total PCB Amount	ND				U

Notes: ND (Not Detected). Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit). Denotes lowest analyte concentration reportable for the sample.
Note: There were few non-target peaks.

AUTHORIZED SIGNATURE:

William A. Kotas
Sr. Laboratory Representative

Robert E. Wagner
Laboratory Director



CERTIFICATE OF ANALYSIS
7/9/2009
CAMP, DRESSER & MCKEE
ONE WOODWARD AVE., SUITE 1500
DETROIT, MI 48226
CONTACT: TODD KING



CUSTOMER ID: PGW-MW3-01
MATRIX: WATER
DATE RECEIVED: 7/2/2009 TIME: 10:03
SAMPLED BY: R. MULCRONE
CUSTOMER PO: N/A

NEA ID: AM09196 NEA LRF: 09070017-03
DATE SAMPLED: 07/01/2009 TIME: 10:45
PROJECT: PTCRA- PLAINWELL INVESTIGATION
LOCATION: PLAINWELL, MI
LAB ELAP#: 11078

PARAMETER PERFORMED	RESULTS	PQL	UNITS	DATE ANALYZED	FLAGS
SW-846 Method 8082					
Aroclor 1016	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1221	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1232	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1242	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1248	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1254	ND	0.0250	ug/L	07/04/2009	U
Aroclor 1260	ND	0.0250	ug/L	07/04/2009	U
Total PCB Amount	ND				U

Notes: ND (Not Detected). Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit). Denotes lowest analyte concentration reportable for the sample.
Note: There were few non-target peaks.

AUTHORIZED SIGNATURE:

William A. Kotas
Sr. Laboratory Representative

Robert E. Wagner
Laboratory Director